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Rail-Road News.

Canada and Maine Railroad and a New Steamship Line.

A few dayssince the Tribune's correspondent noticed a project of Mr. Isaac Buchanan, of Montreal, for the establishment of a line of Steamers between Glasgow and Montreal. Mr. Buchanan visited Portland the past week, the *Advertiser* says, with a view to ascertain the fitness of its harbor for a steamship terminus, and also the exact condition of the Railroad enterprises in which Portland capital is embarked, and especially as to the prospects of the Montreal road. In company with Mr. Poor, he went over the Atlantic road as far as Bacon Falls in Greenwood, sixty miles from Portland, and examined all the wharves and other localities in Portland and in the neighborhood. Mr. Buchanan sailed in the Africa from New York on Wednesday, and will probably bring his scheme to the attention of the public the coming Winter. The plan is to construct three iron steamers of 1,600 tuns measurement, of the same general character as the "Glasgow City," each steamer capable of carrying 6,000 barrels of flour or an equivalent amount of freight, with accomodations for seventy-five first-class, and seventy-five second-class passengers—the steamers to run alternately from Glasgow to Portland and Montreal, till the completion of the Railroad, and after that to Portland direct. These steamers would cost about £30,000 each. Certain New York houses propose to join in the carrying out of this scheme.

Railway through the Alps.

The Piedmontese Journals published the report made to the Federal Council of Berne, by the English engineers, Messrs. Stephenson, Maclean, and Stillman, on the subject of the grand railway between Piedmont and Switzerland. In the course of the works they propose to turn to account the lakes of Geneva and Constance.

Anthracite Coal Trade.

The Pottsville Journal says that the quantity of coal sent last week by railroad to Philadelphia is 54,050·01, which is the largest shipment ever made in one week by the company. This makes the total, by railroad and canal, this year, 1,572,704·05 tons—an increase, so far, of 44,328 tons on last year.

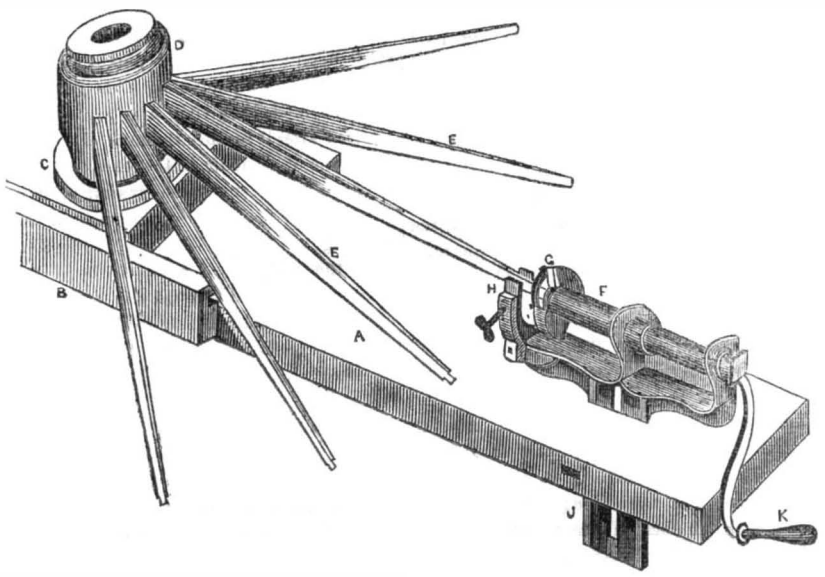
Wheeling Railroad Subscription

The City Council of Wheeling, Va., has passed an order providing for a vote of the citizens upon a subscription of $250,000 to a Western Railroad Company.

Irish Riots.

Great riots have taken place, both on the Hudson River Railroad, N. Y., and the Central Railroad, Maryland. The fights were between two factions of Irish. The Irish are as uncivilized in America as in Ireland, unless they are mixed up with the general population.

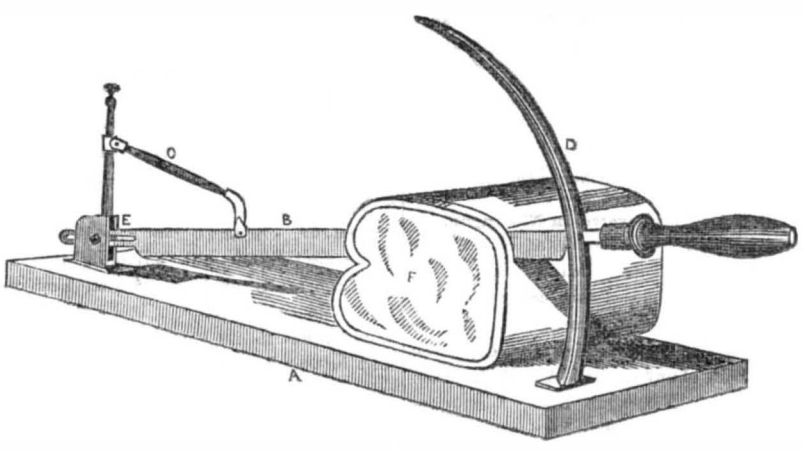
SPOKE TENNONING MACHINE.



This machine is the invention of Mr. Edwin A. Palmer, of the town of Paris, Oneida, Co., N. Y., a practical wagon maker, who has assigned his right, title, and interest to Messrs. Le Roy, Wells & Co., Sauquoit, same County, who are manufacturing the said machine, and are now prepared to execute orders. The machine is simple and good, and will be easily understood by attending to the accompanying description of the figure—a perspective view of the machine. A is the top of a table, or frame; B is a sliding frame, which can be moved backwards and forwards along the top of the table, and secured firmly at any part of it. On this sliding frame there is a circular flange, C, on which the wheel-hub, D, is secured by two small pointed studs (not seen) on the face of the said flange. This flange turns in a socket, so as to move the hub with its spokes, E, successively round to the action of the tennoning cutters. These cutters, G, are fixed on the end of a collar, F, and are of such a form that when they act on the end of the spoke, E, they work forward the collar and cutting knives, to cut the tennon of the proper length. H is a clamp, which swings upon a swivel joint at its foot, and when braced up and secured firmly to the end of the spoke, it holds it firm to the action of the cutters. When the tennon is cut, by turning the screw, H, to the left, the clamp opens like a jaw, and allows the spoke to be whirled round until the next one is brought into a proper position to be clamped, for the action of the cutters. To accommodate the cutters to smaller hubs, the cutting frame can be lowered by the setting bench, J, which has a slot in it to receive a brace passing through part of the table, and which can be taken out and put in, to secure the cutting frame at the desired height, for the knives to act on the ends of the spokes. The knives are set to work in one, two, or three inches, to cut the desired length of tennon on the spokes, by a small collar, seen on the spindle, near the upper end of the crank handle, K. This flange is set so as to stop the collar working in any further than the desired length. The operation is carried on by hand, and as one tennon is cut, the hub is turned until another comes round to its proper place for action. The spokes are set in the hub, just as they are intended to be in the wheel.

The operative qualities, exactness, and simplicity of this machine, are apparent to every body. Communications should be addressed to Messrs. Le Roy, Wells & Co., at Sauquoit.

ROY'S PATENT BREAD CUTTER.



By reference to our advertising columns it will be seen that Mr. Franklin Roys, of the Mattabesett Works, Berlin, Conn., offers rights of his patent for sale, which has been secured for the instrument represented in this engraving. The title will convey an idea of the object of this invention, but it is applicable to more than bread cutting. A is the plate on which the other parts are placed and secured; B is the knife; E is an upright post, to which the front end of the knife is secured by an axis screw bolt passing through a slot in the end of the knife. C is a jointed arm secured on the post, E, by a pivot joint, and to the knife by the same device; D is a curved upright horn, with a slot extending through it the whole length; this is the guide of the knife, B. F is a loaf of bread, and the knife is represented as cutting it. There is no further description required; its action and construction are apparent and easily understood by every person. For more information we refer to the advertisement alluded to above.

To Prepare Window Shades for Painting.

MESSRS. EDITORS—As one of your correspondents (F. H., of Mass.) wishes some information respecting the kind of preparation used by shade painters, and being practically acquainted with the process of manufacturing the same, I will endeavor to impart the information he wishes, together with the process, presuming that it may not be uninteresting to many of your readers.

When the cheapest sort of muslin, of ordinary quality, is used, this is cut in required lengths, and saturated in weak size, made of glue, and well "patted" with the hands so that the size may be evenly distributed, they are then tacked upon frames, having sliding ends, and stretched. When dry, a mixture of boiled linseed oil and turpentine—say equal parts of each—is applied with a brush and thoroughly rubbed into the texture of the muslin. When this is dry, they are cut from the frames and are ready to receive the color.

The scroll work, borders, etc., are painted with stencils or theorems, and with oil colors. The theorems are cut out of cartridge paper, they soon become saturated with the oil and glazed with the color so that the friction of the brush does not injure them. The centre vignettes are generally painted by hand. Colored grounds may be obtained by mixing a little coloring matter with the oil and turpentine. These shades are painted very rapidly by dexterous hands, and vary in price from 50 cents to $2 per pair.

The finest muslin is used for the best quality; those are saturated with size made of white French glue, tacked upon frames, and when dry, a coat of mastic varnish applied. Colorless copal varnish would probably answer, provided a sufficient quantity of turpentine be added to reduce the body of it, and thus prevent cracking when the shades are rolled.

Polar scenes, gothic aisles, cascades, moonlight views, etc., etc., which figure in the windows of our stylish houses, are painted upon muslin prepared in this way, the prices vary from $10 to $40 per pair. They are generally executed by men clever with the brush, and possessing considerable artistic merit. H.

[Our correspondent will be pleased to accept our thanks for his kindness.—[Ed.]

Kerosene Gas.---Nova Scotia Going-a-Head of "Old Mother."

Passing along Holis street last evening, we were attracted, together with a crowd of our citizens, by unusual brilliancy of gas-light in the stores of Messrs. Morton and Gossip, which upon enquiry, we learned was produced from asphaltum, the discovery of Dr. Gesner. A gasometer, &c., are fixed in a building contiguous. This light, when compared with that produced from coal, presents a striking contrast—the gas burning in the windows of the surrounding stores appearing beside the new article as the flame of a candle. It is calculated that its cost is not more than one half the price of coal gas. We understand that the steamboat company intend using it for the purpose of lighting their property on the Dartmouth side.

The Earl of Dundonald inspected the kerosene gas on Tuesday last. Dr. Gesner has already commenced lighting the city, and will afford the article much cheaper than is now paid by consumers, and better.—[Colonist.

[Dr. Gesner is at present in this city, and has within two weeks applied for a patent, for one of the most valuable discoveries ever made in the manufacture of oil, resin, or asphaltum gases.

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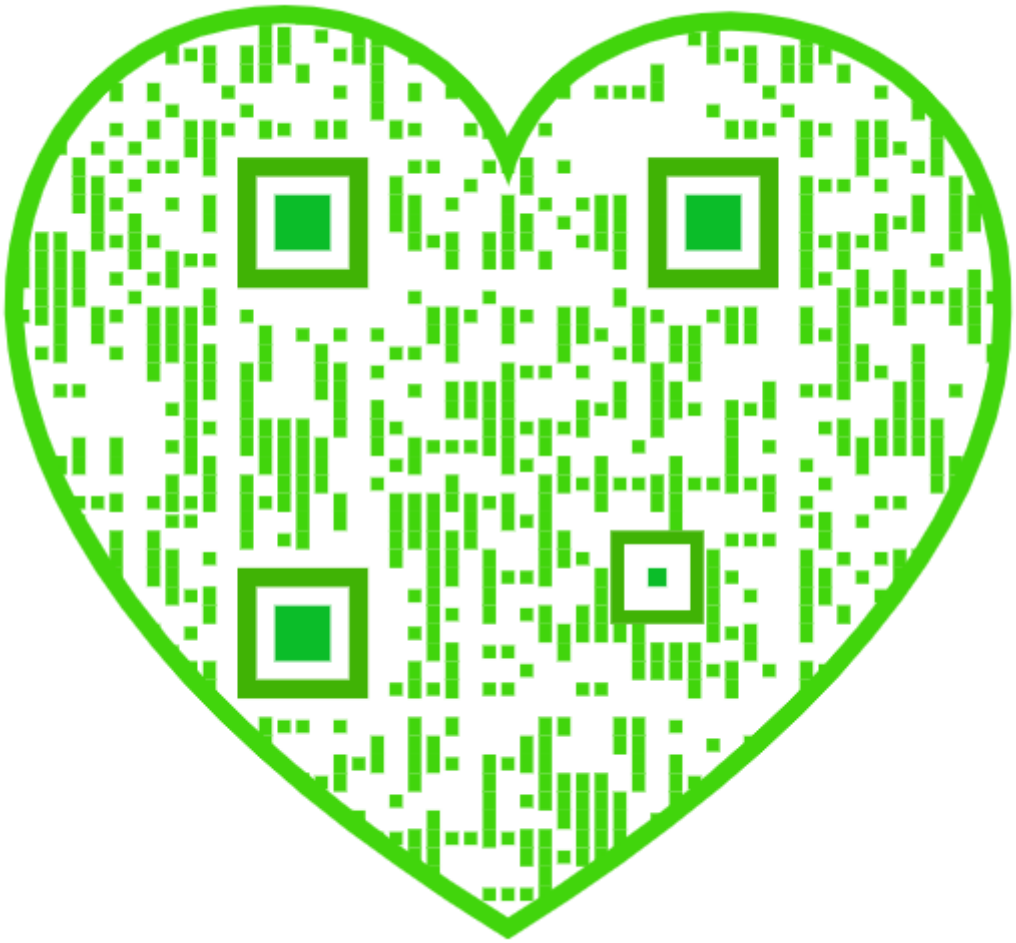

Miscellaneous.

Some Phenomena of Defective Vision.

One of the earliest evidences of old age is defective sight, and the opinions hitherto held respecting the causes of this have been various. A letter has lately appeared in the London, Edinburgh, and Philosophical Magazine, from a Mr. R. T. Cranmore, Eng., respecting a discovery made by him, which will appear singular to many, because the flattening of the cornea has hitherto been held to be the cause of loss of vision, and this is the reason why convex glasses are employed to restore it, and we believe this is the principle upon which Prof. Bronson acts to restore sight —but Mr. Cranmore, who has been defective in vision, states that he took a card and made two fine pin holes, exactly in the position of the centres of the pupils of his eyes, and he found that he saw the true image as correctly as ever he did in his life, to use his own words, "it supplied the place of a pair of spectacles."

By making the pin holes larger or smaller, the focal distance is increased or diminished proportionably. In sunshine he can read at the natural focal distance, but with faint light there is the common confusion of letters. A flattening of the cornea won't explain this; he thinks the cause to be "some want of contractility engendered in old age in the iris." There is one curious fact which he has observed, viz., that fine wire-gauze, of 1-50 of an inch in diameter, in meshes, enables him, when worn close to the eye, to read small print with great facility, at the distance of six inches, and when the meshes are still closer, he can see the most minute objects with remarkable distinctness. This is something for our optical instrument makers.

The Charleston Fair.

The Second Annual Exhibition of the South Carolina Institute, says the Charleston Mercury, closed on Saturday night. The occasion drew a vast number of strangers to our City, and the Hall was crowded with visitors during the whole course of the Exhibition. It was indeed a very interesting show, with less variety of mere fancy articles than the former Exhibition, but with a much larger number of the useful. One saw abundant proofs that the substantial mechanic arts have received of late a great impulse, and that they may now be numbered among the sources of our wealth. These proofs were not limited to Charleston, or to this State. Georgia and North Carolina were represented by many and creditable specimens of their growing skill, and it is not one of the least encouraging features of this annual Fair, that it at the same time diffuses widely the spirit of improvement and generous rivalry, and brings together the active and inventive minds of a large region of the South. Year by year, too, the circle of its influence will widen and the threads that connect it with the industrial pursuits of our country will multiply and gain strength. The prospects of the Institute seem to us altogether cheering, and the problem of its utility fairly solved.

The First Steamboat.

The model of the first steamboat (built by John Fitch) was discovered, a few days ago, in the garret of the late residence of Col. Kilbourne, a brother-in-law of John Fitch, near the town of Columbus, in Ohio. It has been in the possession of Col. K. more than thirty years. It is thus described in a letter to the Cincinnati Commercial:—

"It is about two feet long, and set upon wheels. The boiler is about a foot long, and eight inches in diameter, with a flue through it, not quite in the centre, into which the fire appears to have been placed. The cylinder stands perpendicular, and the framework that supports it is not unlike that now used by some of the low pressure boats on Lake Erie. There is a paddle wheel on each side, and, in fact, everything appears to be complete with the exception of a condenser and force pump. The boiler is even supplied with a safety valve, though part of it has been broken off."

Protection from Pedlars.

Messrs. Editors—Much has been said in regard to the patent laws, because of their inefficiency in protecting the inventor; much more remains to be said, I fear, before a thorough reform will be made. My object is not, however, at this time, an attack upon the patent laws, or any other law, but a proposition that a *new* law be passed, that will affect not only inventors, but consumers,—a law to protect the whole community.

We have had, for a series of years, a set of unprincipled men, who go about the country in the capacity of hawkers or pedlars. I have particular reference, now, to those whose business it is to peddle watches and jewelry. Many thousands of dollars are now being paid out for what they sell to the ignorant as gold and silver, which, to say the least, is nothing more than plated brass, German silver, or copper. Now, would it not only be an act of justice to the community, but also to the honest manufacturer, that *he* be required to stamp, on all articles thus manufactured by him, the word plated, or galvanized, as the case may be, or if of any metal other than gold or silver, the name of the same. An Inventor.

Survey of the Mississippi.

A party of Civil Engineers, who have lately been engaged in an examination of all the passes and outlets of the Mississippi into the Gulf, report, as their opinion, that there is no doubt of the practicability of closing, in a short time, and at a comparatively small expense, a number of the passes, so as to throw the volume of water into a few of the principle outlets, deepening them and affording greater facilities for carrying off the superabundance of water at New Orleans. The north-east Passes are gradually shallowing, while the south-eastern continues at a convenient depth for the large vessels, and will probably increase in depth. Some definite information will be gained from these surveys concerning the changes which have taken place, and are continually taking place, in the outlets of the Mississippi; from which the extent and nature of future changes may be judged of.

The Boiler Explosion.

The explosion of the "Resolute" propeller noticed in our last, has been the subject of an investigation by Coroner Geer, of this city, and the result shows that our opinion, expressed last week, was correct, viz., that the cause of the explosion was over-pressure. G. Albro, a practical engineer, residing at Green Point, testified to being on board the prope'ler Resolute, after the explosion, and found the safety-valve lashed down, which he gave as his opinion was the cause of the explosion. The material of which the boiler was composed, and the workmanship on the same, he thought was sufficiently good to stand one hundred pounds of steam per square inch. Peter C. Crary, a practical engineer, of No. 68 Laight street, testified to being appointed by Government to inspect steam vessels and boilers; examined the boiler on the Reselute on the 2nd instant; found it in good condition, and a certificate to that effect was given the same day. On Saturday last, after the explosion, he was on board the Resolute; found the boiler fractured and the safety-valve lashed down, preventing the escape of steam; and hence the explosion.

New Route Discovered in Nicaragua.

Advices from San Juan, dated Nov. 2, say that the engineers employed in making the surveys for the proposed ship canal have met with the most eminent success, and that the practicability of constructing the canal no longer admits of any doubt. A route has been surveyed from Nicaragua Lake, four miles north of the city, which has an elevation of only sixty feet, and a gradual descent to the Pacific. The engineers pronounce the route to be in every way desirable, the distance being but twelve miles from the Lake to the Pacific.

Stone Ware in Texas.

A friend writing to us from Goliad, Texas, states that stone ware is in great demond there, and the materials to make it are abundant and of the best quality. He says that there is a great opening there for a good Potter to commence manufacturing—here is a chance for some enterprising man.

Patent Case. Casting Chilled Rollers.

In the U. S. Circuit Court, held in Pittsburg, Pa., in the November Term, there was tried on the 20th and 21st ult., before Judges Grier and Irwin, a suit for the infringement of the patent of James Hasley, for an improved mode of casting chilled rollers and cylinders. The parties were Bolmans & Garrison vs. J. C. Parry & Co. The plaintiff proved the making of five or six Sand Rollers, made by letting the metal into the mould by a single gate or gutter, at a tangent to the circumference of the neck of the mould. He also proved the manufacture of about 136,000 lbs. of rollers made upon the plan of the patent of John C. Parry, one of defendants. This patent prescribes a mode of giving a rotary motion to the iron after it reaches the neck of the mould, by means of a paddle at the end of a perpendicular rod of wrought iron, passing up through the chill and the mould of the upper neck and coupling, and having four iron fans or flanges, (like the gudgeon of a water-wheel) on the lower end, inserted through the whole casting until the fans reach nearly to the lower end of the lower neck, and projecting out of the upper coupling or mould. The rod is turned on its own centre by means of geared bevelled wheels, by a crank.

The chief questions urged by the defendant's advocate, were, that a single gate, although tangentical to the circumference of the mould, was not an infringement of Harley's patent. Also, that the casting of chilled Rollers upon the plan of Mr. Parry, as above described, is no infringement of Haley's patent, as it does not profess to produce a rotary motion of the metal, by means of its own gravity, in passing through tubes or gutters tangentical to the circumference, but by mechanical means and direct force, by the use of a rod and paddle, after the metal enters the mould, at a perpendicular to the diameter of its neck.

When the jury came in to deliver the verdict, the plaintiffs took a non-suit—the Court, through Judge Grier, having declared its opinion, that casting rolls under the patent of John Parry was no infringement of the mode of casting by Mr. Harley.

Letter from Mr. Paine.

Gents.—When an announcement is made in your journal of a *proposed* undertaking, or of a *suppositive* discovery, comments thereon, anonymous or otherwise, pro or con, are naturally looked for, and justly made. But when a party over his own proper signature, makes a positive statement, and backs the same by demonstration, that he has discovered some new law or property, I hold that no person, governed by the commonest rules of courtesy, has a right to deny the truth of such a statement over an anonymous signature. Therefore, till such time as "Gior," alias "Carburetted Hydrogen," throws off his mask, I consign him to the shades, along with the "Scientific Committee." Henry M. Paine.

Worcester, Dec. 2, 1850.

Ship Building in Oregon.

There is a steamboat now building in Oregon, the keel of which is all of one piece. The tree from which it was taken was cut within a few rods of the yard, and measured 124 feet to the first limb, and at 155 feet 8 inches it was cut off, and hewn out 9 by 14 inches.—There are two saw-mills adjoining the shipyard, constantly employed in getting out timber for the ship builders. The land at Milwaukee, and in its vicinity, is excellent, as may be seen by the heavy growth of pine, fir, oak, cedar, and hemlock timber, standing thereon. The climate is delightful, being, for the most of the time, like our "Indian Summer."

A Suggestion to Builders.

The "Builder" asks, could not bell-wires, or other apparatus connected with bells, be secretly attached to lock-works or doors, so as at once to give warning, on the slightest attempt to pick the lock or move the door? No doubt it could be easily done, and thus a great amount of robbery be frustrated.

A Curiosity.

Mr. Robinson, a bookseller of Edinburgh, has a portion of the trunk of a beach tree sent from Victoria, in Canada West, in which the horn of a red deer, with its antlers complete, is seen entirely imbedded in the hard and solid wood, which it had evidently transfixed when the tree was young and in a comparatively soft condition. The antlers, which are palmated, have been driven into the wood horizontally, and protrude from the one side while the root of the horn is visible on the other.

Ingenious Piece of Workmanship.

The New Bedford Observer (Eng.) says:—A person brought to our office the other day, a polished hazel nut, mounted with silver, and made to open on hinges and close with a spring. On opening this diminutive casket, there lay upon crimson silk a silver tea kettle, with hinged lid, all of the neatest and most perfect finish. This fairy apparatus, we are informed, was made from a fourpenny piece by a working jeweller named Burton.

President's Message.

This document came along to New York in a common sense manner, last Saturday, but was preserved by the Post Master until word was sent by telegraph that the reading of it had commenced in Washington. It was then delivered to the different papers, set up, and was flying about the streets in about an hour afterwards. There was some sense displayed in this arrangement, in comparison with expressing or telegraphing it from Washington. The press is overwhelmingly obliged to President Fillmore for this new and useful improvement.

Water Gas Company.

The water gas company, at Jersey City, which commenced with such extensive operatione, has exploded. The President vanished, and the Company, with a half million of dollars capital, has dissolved, without declaring a dividend, and Jersey City is still in darkness.

By the way we find in the Boston Transcript of Wednesday the following in reference to Paine:

Paine's Light.—We understand that Mr. Paine gave an exhibition of his truly wonderful gas light last evening, at Worcester, previous to sending an agent (who left in the steamer to-day) to London, to introduce the gas at the Exhibition of the World's Fair.

The Scotch and American Yankees.

What Lord Stanley insinuated, and the Lord Provost of Edinburgh said, of our countrymen beyond the Tweed, was repeated in other words at Manchester, on the 30th ult., by the Rev. Dr. Bacon, of New Haven, U. S:—"The inhabitants of New England, said he, are what are called in America "Yankees." You don't know here what a Yankee is. All Americans are not Yankees, not more than all subjects of Queen Victoria are Scotchmen. The Yankees, in fact, are the Scotch of America, and the Scotch are the Yankees of Great Britain. (Laughter.) I was saying this to a lady in Edinburgh, the other day; and I told her that, for all that, you would find Yankees everywhere but in Scotland, and Scotchmen eeverywhere but in New England. And what is the reason? Because they are both Yorkshire—(roars of laughter)—or, as we say at home, they have both got their eye-teeth cut. (A laugh.)—[Glasgow Mail.

To Connecticut Mechanics.

We learn by the Hartford Times, that Gov. Seymour has appointed H. D. Smith, Timothy Dwight, Nathan Belcher, and Samuel Colt, as a Committee, for Connecticut, to examine machinery, &c., intended for the London Fair. They will be ready after the 10th of the present month to receive all such articles at the State House, Hartford. The vessel will sail for London on the 10th of January; all articles, therefore, must be in by the 1st January, 1851.

The city expenses of San Francisco are estimated by the Comptroller, for the year 1851, at $1,294,000, and he reports that the available means of the city are amply sufficient to meet such expenses.

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For the Scientific American.

The Voltaic Battery.---Electrotype.

NUMBER VII.

When metal is deposited by the battery, for the purpose of copying the form of the recipient, or basis, the process is called electrotype. The Electrotype Art is, therefore, the art of casting by galvanism; and the successful practice of electro-casting, like any other mode of casting, consists in making fine impressions and good metal.

The mould to receive the deposit must be of metal, or, if not of metal, it must have a metallic face, and should be impervious to water. A great many substances and mixtures have been proposed for moulding: plaster of paris, beeswax, tallow, and spermaceti, and mixtures of wax, tallow, and rosin, in a multitude of proportions. Before the plaster casts can be used they must be made water-proof, by smoking in hot wax or tallow, until all the air is driven out of the casts. If the plaster cast is taken out of the melted wax or tallow, while quite hot, the fluid will soak into the cast and leave the face rough. And if taken out when too cold, a portion of superfluous wax will be left on the face and mar the design.

In moulding with wax and other like substances, we have again to avoid an extreme of heat or cold, for if poured too hot it will stick, and if poured too cold the impression will be imperfect.

The above methods of moulding, when well conducted, give very handsome casts, but the process is extremely tedious, uncertain, and filthy.

Medals, dies, wood-cuts, pages of type, and almost every article not as fine as an engraved copper plate, may be readily moulded in gutta percha. The gum is to be put into hot water until softened through, then wiped dry, and the object to be moulded strongly pressed down on it; when the design is very deep it will be necessary to confine the gum in a box as in the ordinary process of coining. As soon as the gum is cold it may be taken from the stamp, and if the quality of the gum is good, the impression will be very fine. There is no danger of the gutta percha sticking to the stamp, and even the most superb bronzing will not be soiled by this method. More moulding can be done with gutta percha in an hour than in a whole day by the vexatious methods recommended in books on electrotyping.

After having obtained a good mould, it must have a wire twisted round the edge, and then given a metallic face by brushing it with plumbago on a camel's hair brush, making sure that the plumbago forms a metallic continuation from the wire ring over the entire face of the mould. The mould may now be attached to the zinc end of a battery of three pairs and introduced into the precipitation vat; the copper will begin to deposit on the wire ring, and spread over the black-leaded surface, at the rate of about one inch per hour, if the plumbago is of good quality. If the spreading of the copper is slower than this, the experiment will be likely to fail. No directions can be given for selecting the black lead—trial alone can determine its quality.

When the work to be executed by the electrotype is required to be very fine, and especially if large, as in the duplication of engraved plates of maps, the process of first moulding, by casting or other means, is not applicable, the mould must here be made by the battery process; the engraved plate is to be put into the precipitating vat, and copper deposited on it as though it were a mould. The mould obtained by this process is superior to all others in sharpness.

When the deposit is made on a hard metallic plate, there is a great liability of the deposit forming one mass with the original; all attempts to get the deposited and original plates apart prove unavailing, and the work of the engraver is lost. By this adhesion of the deposit, cabinets of choice medals have been entombed in copper, and engraved plates, which cost thousands of dollars, converted into unsightly masses.

(To be Continued.)

The Chili Pine grows on the mountains to the height of 100 feet.

Spring Power to Propel Vessels.

CHARLESON, S. C., Nov. 18, 1850.

At an accidental *dejeuner* of several gentlemen of scientific and mechanical attainments, in this city, a conversation took place as to the practicability of applying the simple principle which originates and continues the motion of a watch—that of the "spring"—to ferry-boats on rivers and other waters, where the expense of steam-power could not be afforded; and as some of these gentlemen are subscribers to your able periodical, I was asked to name the matter by letter to you, so that the idea might be laid before your readers for the exercise of their ingenuity; and probably by such means some good practical result might follow, in the shape of that great desideratum "A Self-propelling Ferry-Boat."

This idea may not be entirely new to many of your readers, as a scientific amateur suggested it, sometime since, to the British Admiralty; but it passed unnoticed by reason of the want of the patronage of great names. In this instance, however, the parties here referred to are disposed to invest, say one thousand dollars, to carry out the project, should a really able and practical mechanic be found to undertake the construction of a model, and enter into engagements to disclaim for ever all right or title to the patent, in the event of such being obtained.

Your own views on the subject are respectfully solicited.

EDWARD BINGLEY, Engineer.

P. S.—The Fair of our Institute promises to exceed, on this occasion, everything that has hitherto appeared in the South. E. B.

[The employment of a spring, or springs, to propel any kind of machinery but that which is of the lightest description, is impracticable. A boat was constructed in New York, in 1809, to be propelled by springs, to supersede the invention of Fulton and his steamboat. It gave Fulton great uneasiness, owing to the reports circulated about it, and the beauty and regularity with which a small model worked; but when the boat was completed and launched, the powerful springs which were to move her by self-action, were not able to move her one yard.

In measuring the power of springs, and their relative action, we have very little practical data to guide us. So much depends on the simple temper of a spring, that one of the same thickness and length as another, will often exhibit double the amount of elasticity. Theory, however, can settle the question.

Suppose a boat requires two horse-power to propel it across a river in fifteen minutes, it will require the labor of two horses for 15 minutes to coil up the spring, before the boat commences her trip; or it will require the labor of four horses for seven minutes and a half to accomplish the same thing. Time, space, and weight must all be taken into consideration in estimating mechanical force. On the other hand, allowing four men to be equal to one horse-power, these four men could coil the spring in 30 minutes, to propel the boat across the river. "Action and re-action are equal." The reason why a spring is so applicable to drive clock-work, is owing to the small amount of power required to drive the machinery; this is so small, that a man can exert as much power in one minute to coil up the spring, as is required to work the machinery for some days; but when we come to apply the spring to a large machine, we find a cheaper power in steam and animal power. A spring has no power in itself—the power is outside, viz., the coiling power. A machine with power in itself to drive itself, would be perpetual motion. No machine ever constructed contained a power within itself. Speaking correctly, we have never seen a self-acting machine.

Our Charleston friends would spend their money in vain, if they engaged in such an enterprise as the one suggested above, but that there are gentlemen in that city who are ready to engage in making a reasonable experiment in this field, says a great deal for their spirit,—we would search in vain, in this money-loving city, for such patrons of mechanical science.

166,800 bbls. of American flour arrived at Liverpool for the fortnight ending Nov. 1st.

For the Scientific American.

Functions of the Nervous System and Brain Scientifically Considered.

Animal functions depend upon organic action. Every effect is a resultant of a moving cause. The stomach yearns for food as the chyliferous vessels call on it for blood material; and it calls for liquids or solids, as the case requires. The lungs call for oxygen, or perhaps, more definitely, electricity, and will have it to arterialize the blood as long as the channel is not closed on them by some unnatural obstruction; and so it is with all the animal organs. Each one acts its part according to its legitimate appointment, just as certain as a wheel will revolve because it is fastened to an axle, and the axle to a crank, and the crank to an engine, and the engine moved by electricity or caloric in some form.

Animal organization may be appropriately compared to a combination of locomotive and magnetic telegraph apparatus. The stomach, heart, lungs, and limbs, acting as fire-place, forcing pump, working cylinder and levers. The nervous system acting the telegraphic part; the nerves, the wires; the ganglions, the stations; the brain, the general registering depot. The brain, being composed of convolutionary folds, is the portfolio of knowledge, wherein all action is inscribed, whether through the nerves of feeling, sound, smell, taste, or vision. All things have form,—sound has, it developes itself so in acoustical experiments; and, reasoning by analogy, smell and taste develope themselves in form also, and we know that substances, acting upon the nerves of touch and vision, have form. The resultants of action on these organs are daguerreotyped on the folds of the brain, and constitute knowledge, mind, intellect, or whatever we choose to term it, and just in proportion as the brain is voluminous and fine in its texture, and the individual has been observant and studious, so will be the quality and quantity of his knowledge, allowance being made for the time he lived. If the body is of good healthy constitution, the nervous system finely strung, the brain voluminous and clear, the senses all perfect, such an organization is susceptible of a wonderful amount of knowledge in two or three score years.

If this is not all a dream, but logical reasoning, then mind is a resultant of action upon the nervous system, and is that quality of human nature which developes itself upon any and all exciting causes, acting through one, more, or all of the senses. Instinct is that property which arises from spasmodic action in the muscles and organs, as hunger, thirst, want of air, warmth, coldness. Mind is the record upon the brain, which can be referred to after its inscription. The brain is blank at birth, and should be kept very clear in infancy, for if it gets blurred and blotted, then it will forever mar the intellect afterwards.

When we place our fingers against our foreheads, while endeavoring to recollect, or reflect, we but touch leaf after leaf of the brain, looking over the pictorial history of our *acquired* mind. Mind, then, is a resultant of matter, since matter cannot be a resultant of nothing.

This view of the nervous system and brain can be illustrated in a thousand different ways—and as your journal is devoted to scientific improvement, mainly to secondary machinery, a little devotion to the improvement of the primary machine—man—may be of some use, for it cannot be denied that God works on scientific principles. JNO. WISE.

Lancaster, Pa., Nov. 24th, 1850.

Bridge over the Ohio.

Mr. Pope, from the Committee on Judiciary, in the Senate of Kentucky, has reported a bill providing for the incorporation of a company to construct a bridge across the Ohio River at Louisville. To avoid any interference with navigation, the bridge is required to be 100 feet above the highest known point of high water, which will make the structure 132 feet above low water mark, sufficient, it is alleged, to clear the highest chimneys of any steamboat upon the river at all times and stages of water. The piers, also, are to be 700 feet apart.

World's Great Convention of Doctors.

An account is given in some of the European papers of a great congress of medical men, which it is proposed to hold in France, for the purpose of testing by experiment the virtue of a newly-discovered cure for madness and for the bites of venomous serpents by means of "cedrone" seed. It seems that two subjects M. Auguste Guillemin and M. Hippolyte Fournier, Professor of Mathematics, of the Department of Aveyron, have offered themselves to be operated on—which means, we suppose, that they offer themselves to be bitten—for the purposes of the inquiry. "It has been thought advisable," says the "Brussels Herald" "to postpone until next month the experiment to be tried on M. Auguste Guillemin, in order to afford sufficient time for all the celebrated medical men of France and other parts of Europe to meet together at this sort of medical congress, in which one of the most difficult problems of occult medicine is to be resolved. It is announced that all the different states of Europe will be represented at this meeting: Russia, by a physician attached to the person of the Emperor; the German States by seventeen doctors: and Sweden, Norway and Denmark will send delegates, although in those cold regions there are but few serpents, and cases of madness are rare. Some of the "cedrone" seed will be sown in the *Jardin des Plantes*—where it is hoped it will succeed. Several of the faculty, who have already made experiments on different animals, hope, by means of the "cedrone" seed, to arrive at the cure of mental disorders and epilepsy.

Bridge from France to England.

The Paris Academy of Sciences have been considering the practicability of a railway across the channel which divides England from France. The project—which seems to combine the real suggestions of science with the sort of poetic calenture that applies them dreamily—originated with M. F. Lemaitre and may be briefly described as follows: On a solid foundation on either side of the channel, the projector proposes to build high and strong abutments, into which huge chains stretching across from shore to shore in the air would be secured. To support in the air this massive weight of iron, for the twenty miles of space between the Dover abutment and that at Calais, the projector makes use of a formidable apparatus of balloons, of elliptical shape, firmly fastened to the chains. These, it is thought, would do away with any support from below; but, lest the balloons should fly away with the iron work altogether, M. Lemaitre proposes to sink four heavily laden barges at every hundred yards' distance, under the great chains, and connected with them by means of other chains. Having adjusted the length of these attaching irons to the depth of the sea at each point, an equilibrium would be attained between the sunk barge and the floating balloons. Assuming that the gases never escaped, the sunk vessels never got disturbed—no one of the thousand accidents occurred to which such a bridge would be liable—it would remain thus suspended between the two countries—and the balloon would at length have found an office of dignity. Held by the chains so suspended, M. Lemaitre proposes to establish an atmospheric railway!—Visionary as the scheme sounds, we are assured by the French papers that it is seriously occupying the attention of the Academy.—Fancy travelling over a bridge held by balloons in a high gale.

World's Fair on Governor's Island.

"Observer," the Washington correspondent of the Philadelphia Ledger, states that at a Cabinet Meeting it has been decided to hold the next World's Fair in America, and on Governor's Island. A beautiful building is to be erected on the Island for the purpose, which, for the time, will serve as a Government warehouse. No duty will be exacted if the articles are re-shipped to Europe, but if sold by the exhibitors or their agents, the duty is to be paid at the time of delivering the articles. Works of art are to be included in the exhibition.

We shall see, by-and-bye, if all this turns out to be—to be—to be—

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New Inventions.

Self-Acting Parallel Gate.

Mr. S. T. Sanford, of Fall River, Mass., has invented and taken measures to secure a patent for an improvement in a self-acting parallel lifting gate. The gate is so made that there is a platform, or road-way, on each side of the gate, on which, when a person or a team treads, the gate flies open, and when the person or animal, or a carriage, passes off the platform, the gate closes of itself. The gate is made of two leaves, of parallel bars, like Smith's, and these two leaves, when the person, &c., steps on the platform (which is part of the road-way), immediately fly, or rather fold up vertically at the gate posts on each side, so that there is a free passage at once through the gate. The platform spoken of is connected with levers below, which are acted upon by the platform, like scales, and two levers being connected by a rope passing over the inner ends (which are shaped like pulleys) of the bars of the gate—the result is, that the levers are pressed down at their inner ends; this action draws down the cords spoken of, consequently the parallel bars fly up, and the two leaves are folded together, thus opening the gate. The gate is kept open while the weight is on the platform, but, when it is off, the leaves of the gate, and each bar, fall successively into their proper places.

Coal Breaking Machinery.

"The trials of coal breaking by hand hammers, and by Battin's Steam Breaker," says the Pottsville Mining Journal, "have proved the latter to make the greatest waste. John K. Smith, Esq., of Tamaqua, has devised a new coal breaker and screener combined, which will allow all passing coal to escape being broken, when it is already small enough. One cause of extra waste by the present revolving rollers is that, whether large or small, the whole mass is subject to equal breakage. The new machine consists of a quick-revolving inner long, solid, tapering, toothed roller; around which, as a sheath, revolves slowly a cast-iron, party-meshed screen, armed also at the angles with cutting teeth.

The coal enters where the taper end of the roller is. This is so wide from the screen, that coal, already small enough, passes through the meshes of the screen untouched by the cutters.

A cheaper breaker, the invention of Aquilla Bolton, Esq., of Port Carbon, is offered to our choice. It is made hopper fashion; the inner toothed cone revolving and cutting the coal in connection with the stationary cutters between which its teeth are driven. The peculiarity of this machine is that there are wide perpendicular escape funnels, through which coal already of the proper size passes without coming in contact with the cutters. This principle must form a feature in all coal breakers hereafter. The Bolton breaker can certainly be driven with less power than any effective breaking machine we have yet seen; and its first cost will be very low, for it is the perfection of simplicity.

Match-Making Machine.

Mr. Geo. W. Burgess, No. 140 Race street, Philadelphia, informs us that he has a machine admirably adapted for making round and square match splints. It was originally intended for making shavings for mattresses, but can easily be adapted for making the splints. It makes two cuts of 14 inches in length, at every revolution, and makes 50 revolutions, easily, in one minute, and deposits the splints in regular order in two boxes. There is no wood wasted in making square, and very little in making the round splints. One-fourth of a horse power can drive it. The machine is not expensive to construct.

Water Pressure Engine.

Mr. G. Cooper, of Coopersville, Clinton Co., N. Y., has invented and taken measures to secure a patent for improvements in water pressure engines, by which, it is contemplated that the water will be discharged faster and with greater ease from the cylinder, than by any water pressure engines heretofore used.

BATTY'S PATENT SERVING MALLET.

This mallet is an instrument used on shipboard, and by riggers of sailing vessels. The Serving Mallet is employed to cover, by encircling rope with spun yarn, to prevent it from chafing. The face of it is concave, like C in fig. 3, and this hugs the rope D, figure 1, while the rigger, by passing two or three turns of yarn over the back of the mallet, and whirling it round the rope, D, the yarn is served out, and the rope is covered gradually, as represented by the covered end at C E, figure 1. The object of this invention is the placing of a number of anti-friction rollers in the back of the mallet, to make the mallet more enduring, in the first place; also, to allow the spun yarn to be served with less friction, thereby allowing the work to be done with less expenditure of labor; and thirdly, the concave of this mallet face, is not made equal throughout, like the old mallet, but is formed with a smaller hollow, for the part embracing the uncovered rope, D, than that embracing the covered part, E. Figure 1 is a perspective view; figure 2 is a cross section, and figure 3 is a perspective view of the face of the mallet, with that part open which receives the friction

Fig. 1.

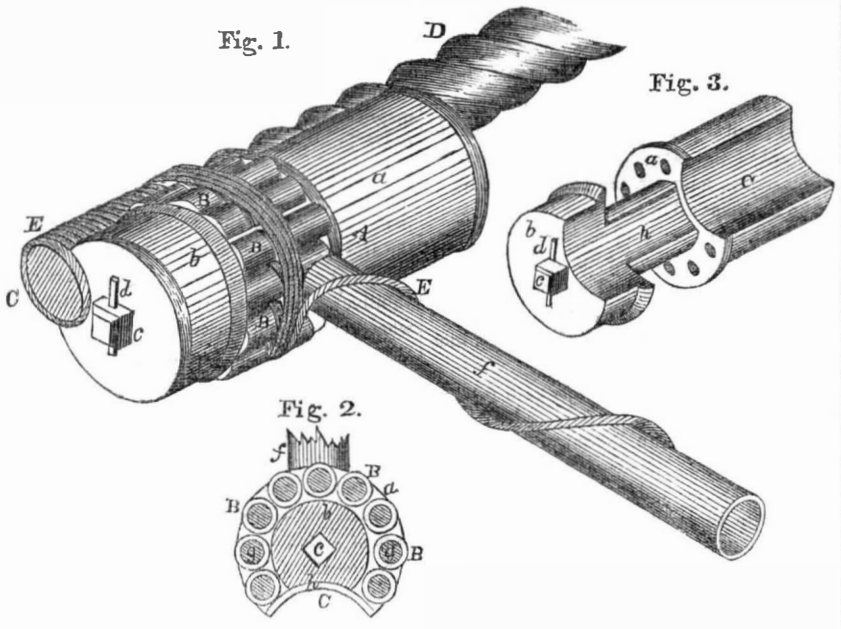


Fig. 3.

Fig. 2.

rollers. The same letters refer to like parts. The mallet may be made of wood or of cast iron; it is made of two principal parts, or sections. A represents the head, and *a* and *b* are the two sections; they are united together by a square bolt, *c*, passing into, and secured by a key, *d*, in section *b*, figure 1. B B are metal anti-friction rollers. They are set in and secured in bearings between two plates, in the two sections, *a b*. Figure 3 shows the space for the reception of these rollers. There are grooves running around these rollers to retain the spun yarn in its proper place. E is the spun yarn; *f* is the handle. C, fig. 3, represents the face of the mallet and the largest concave, which embraces the covered rope; *h* represents the smallest concave of the face, which embraces the uncovered rope. D, fig. 2, is taken through the rollers, and shows the ends of them, *g g*, in their bearings. The spun yarn has two motions, one passing around the rope with the mallet, the other over the back of the mallet—serving the yarn on the rope. On the old mallet, the yarn, E, by passing rapidly over the back—(a firm unyielding surface)—soon wore it out, and caused great friction. The rollers, B B, revolve with the rope, thereby presenting a changing surface, avoiding great friction and wear of the back of the mallet. Mr. Batty makes his mallets of metal, and, to use a common expression, "there is no wear out to them;" while the old kind of mallet wears out, with constant use, in about two weeks; and it requires a great amount of grease to assist the serving of the yarn, while this does not require any. This mallet was patented on the 20th of last August; has been faithfully tried by Commodore Salter, at the Brooklyn Navy Yard, has received his warmest commendations, and is now to be introduced into the U. S. Navy, by Commodore Skinner.

Mr. Batty resides at 205 South street, this city, to which place communications should be addressed to him for further information in regard to his invention.

IMPROVEMENTS IN RAISING AND LOWERING CARRIAGE TOPS.

Figure 1.

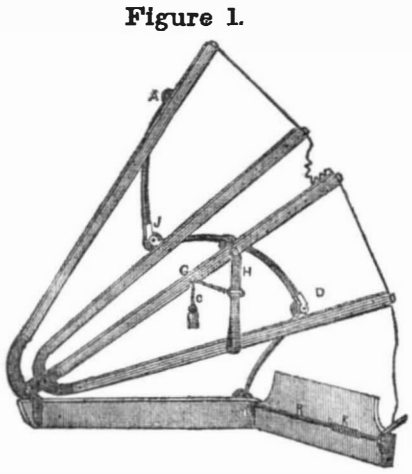
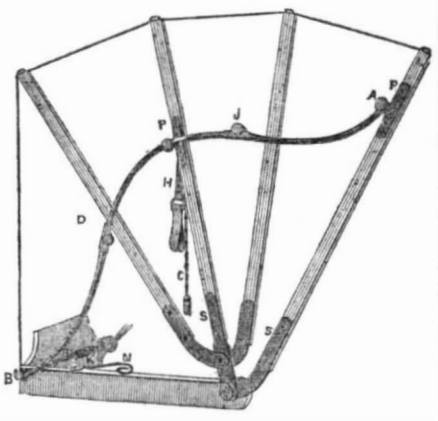


Figure 2.



This improvement is the invention of Dr. J. L. Allen; it is secured by patent, which is owned by Messrs. Cornwell & Cowles, and the patentee, of New Haven, Conn.

The object aimed at by the patentee, was to devise a plan by which any carriage top might be raised, let down, or secured at any desired point of elevation, by a person sitting in the carriage, without trouble and with but little exertion of strength. It is believed that in convenience, durability and cheapness, the Improved Carriage Top cannot be surpassed. The Top may be raised, lowered, or held at any desired elevation, as easily from the inside as the outside of the carriage. Without moving from the seat, the Top can be managed as easily as to take a whip from the socket. The difficulty of dismounting to manage the Top, and of getting in and out of the carriage with the Top raised, is thus entirely obviated. It will also be seen by the drawings that the necessity of going to both sides of the carriage in order to raise or lower the Top from the outside, is in the like manner obviated. The improved Top will last much longer than those heretofore used. The spring sustains the weight of the Top and prevents wear and chafing when the top is thrown back. While these improvements add largely to the value of the Carriage, and the convenience of the user, they cost but little more than braces of equal quality manufactured on the old plan. The beauty of the new braces at once commends them to every person of good taste, notwithstanding the hand-holder and rein hook levers give all convenience desirable, when applied to the common joints.

By a reference to the accompanying drawings, the same letters in which refer to like parts, and to the description of figures 1 and 2, the construction of the improvement will be easily understood. One brace only is used which extends from A to B—the centre limb of the brace bring hung upon a prop at P. This prop is hollow, and the bolt which is fastened to the brace, passes through the prop to the inside of the Carriage Top, where it connects with the hand-holder-lever, H. By simply moving this handle, H, backward or forward, the Top is let down or raised up—the joint, D, moving backwards, and the joint, J, downwards. Another handle, N, attached to the rod at the lower end of the brace, may be used in the same manner instead of the hand-holder-lever. To use this single brace with double joints, the slats or bows, S S, must be hung on the same centre as shown in the cuts.

The braces on both sides of the Top are connected together by the rod, R, which lies against the back of the seat under the lining. This rod is square at each end and passes through a square hole in the bottom of the brace at B. By means of this connecting rod, it will be seen that the braces on both sides of the Top are operated simultaneously by moving the handle, H, as above. A spiral spring, K, is wound around the connecting rod, fastened one end to the back of the seat, and the other to the rod itself. The spring is proportioned in strength to the weight of the Top, sometimes two springs are used. As the Top falls, the spring winds around so that it falls slowly and steadily, while a very slight pull at the hand-holder is sufficient to raise it.

If it is wished to hold the Top partly raised, the looped cord, C, need only be put over the knob, G, at any desired distance.

This improvement is perfectly applicable to the old-fashioned double brace. The braces and levers are made and sold by the firm above mentioned, No. 29 Orange street, New Haven. Orders for work, or applications for rights should be addressed to them. We have seen a great number of excellent testimonials respecting the good qualities of this improvement.

Machinery for Turning Irregular Forms.

Messrs. Editors—From your known willingness to do justice, I request that you give the following an insertion in your paper.

In the Scientific American of the 9th inst., there appeared an article, signed Jonathan Russell, which is calculated to create a false impression in the mind of the public. Mr. Russell well knows that I make no pretensions to a knowledge of machinery; and I have told him that I do not thoroughly understand those we are using. With regard to his machine, I never expressed an opinion to him concerning it; but from the opinion of Judge Grier, lately given, in which he pointed out the tracer, the model, the rough material, and the cutter, working in connection, as the prominent feature of Mr. Blanchard's patent; also the late charge of Judge Woodbury to the jury, in terms fully as strong, there can be no doubt that his machine is a plain violation of Mr. Blanchard's right.

In reference to Mr. Lindsley, I certainly set some value on his opinion, and he told Mr. Russell, in my presence, that his machine could not turn a last at all. John Howard.

Philadelphia, Nov. 6, 1850.

We have inquiries for machinery used in the manufacture of brooms. If any of our subscribers can furnish it, we shall feel much obliged.

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Scientific American

NEW YORK, DECEMBER 7, 1850.

Our Manufactures.

While the sounds of political agitation come floating upon every breeze, there are other objects and other interests which arrest our attention and excite our feelings. There is something sad, yea even solemn, in beholding the dilapidated mansion, or the ruined homestead; and more than once we have been painfully thrilled at seeing a millstone in some lovely vale, lying silent and broken amid the debris of the once busy mill,—the stream still singing sweet, but no response coming from the laughing hopper or the merry wheel. With such feelings we now hear the reports of factories stopping and closing up their labers. There is no sight which conveys a deeper sensation of "sadness lone," than that of a factory, once jocund with the sound of an hundred voices, and the gleesome hurling of throstle and loom, standing tall, deserted looking, and silent. The once busy wheel, which gave motion to thousands of spindles, and hundreds of shuttles, stands gloomy and motionless, like a worn-out war steed. The bell that once clanged cheerily at the evening hour, no more calls out hundreds of gladsome toilers, gushing home through the factory doors, to enjoy the evening's recreation and repose. There are many deserted oriental cities, which have no doubt been depopulated by war, famine, and pestilence; these have their counterparts in our suspended factories and noiseless mills In them

"No more the spindle twirls the slender thread,
No more the shuttle flies to win the worker's bread."

From Rhode Island, that busy cotton cloth-making hive, we learn that about seventy factories have stopped; from Lowell, and our eastern manufacturing villages, we hear the same ominous reports. In Maryland, in the Patapsco Valley, "silence reigns;" and even from the sunny south we hear of depression and suspension of manufacturing operations. From east, west, north, and south, "the times are bad, the cotton manufacturers say," and they say so truly. The important question in such a case, is, "What is the cause?" One says, "a higher tariff is wanted;" another says, it is owing to the high price of cotton, and a few among the great many say, "it is owing to manufacturing too many coarse goods." The first question is a political one, and we therefore will not discuss it. The other two are so entwined together that we must and readily can briefly establish their truth or falsity. If the demand for cotton cloth was equal to the supply, the high price of cotton would be paid by the consumer, for if cloth must be had, it makes no matter whether its price be one shilling, or one and sixpence. There is every reason to believe that the supply has been greater than the demand, for the coarse cotton manufactures of Britain, have long been in a depressed state, the exports being less for the last two quarters in every kind of cotton manufacture; and taking this into consideration, along with the great number of our factories which have done but little for the past six months, we should have expected some clearance of goods in the markets and a a respectable advance in the prices, to meet the corresponding high price of cotton; but no such appearance of demand for goods is manifested, or rather, the markets are as glut full of cheap goods as ever. The merchants always like to sell cheap; they care not for the manufacturer's interest, only give them cheap goods to sell. It is a commercial fact, too, that "when prices are once lowered to a fixed standard for some time, it is almost impossible to elevate them above it, however great the necessity may be for doing so. It is our opinion that there have been too many of our factories engaged in making coarse cotton goods. At the North this is self-evident, for coarse goods can be manufactured cheaper at the South, and with the great number of factories now in operation in Georgia, Alabama, Tennessee, South Carolina, and some other States, how can it be expected that our northern manufacturers can long keep the field against them—they cannot do it. Leaving the political question out of sight, there is one remedy which we would suggest, that is, to go into the manufacture of finer fabrics, give your cotton more labor, employ more skill, and spend more for fine machinery. If you do not take our advice, there is a brave chance for you to lose all your machinery, factories and all. Cotton, at 6d. per pound, if it requires only the labor of 6d. to make it sell for 12d., (the cloth weighing one pound we mean) if the cotton raises in price to 12d., then the goods would have to be sold for 50 per cent. more, to meet the rise in the raw material. On the other hand, if cotton at 6d. requires 12d. labor, to sell it for 18d., then if cotton rises to 12d., it requires only the advance of 25 per cent. to make the goods pay. Everybody knows that it is easier to get an advance on high than low priced goods; this is the reason, the advance is less in proportion than on the low priced goods.

It is difficult to get stockholders of joint-stock companies to make wise and reasonable changes in machinery, &c., even when backed up with urgent requests by able agents of factories; this is the reason why those factories are generally most successful, whose head stockholder has the ability, and is chief manager. We know of a factory, not above sixty miles from New York, the machinery of which has paid for itself over and over again; and although the very first quality of machines are made in the machine shop, for other factories, the old mill displays looms twenty-five years old. This should not be: our manufacturers must adopt some new measures speedily and decisively. What we have suggested may not, if acted upon, result in a complete remedy for the evils set forth, but our suggestions are certainly of a remedial character; and we have no doubt that, if they were acted upon, many of our factories, with their machinery, spindles and looms, now gaunt and silent like dry bones, would soon become animate with vitality, health and prosperity.

Commissioner of Patents' Report. Concluding Remarks.

We have noticed the Report of the Patent Office more at length this year than we have ever done before. The document demands it, because it is the most important one, so far as it relates to mechanics and inventions, that has yet been issued. Heretofore the Mechanical and Agricultural Reports were issued together, the Agricultural occupying the first, and the mechanical a rather indifferent place. This year the Mechanical Report is very luminous, and is decidedly good. There is one thing about it for which our inventors will be for ever indebted to Mr. Ewbank, we mean the great amount of information published respecting the early American Inventors. To his honor, he early set about rescuing notices of early American inventions, and for that purpose he issued circulars to the Governors of different States, requesting any information about any of the old inventions, which were patented in several States, before they surrendered their rights to the Federal Government. The result of this is the published controversy between James Rumsey and John Fitch, about the invention of the steamboat. There is also a short biographical sketch of Jacob Perkins. There is also a curious document from Gov. Trumbull, of Conn., giving an account of a patent, granted in 1728, to Samuel Higley, of Simsbury, and Joseph Dewey, of Hebron, Conn., for making steel. Higley was the inventor, and made the first steel in America. The first patent for a smut machine was granted to Oliver Evans, in 1786, by the State of Maryland. A patent was granted to Robt. Lemmon, of Baltimore, in 1786, for carding and spinning machines. In 1786 the State of New Hampshire granted patents for 14 years, to a Benjamin Dearborn, for making scales, and a hand water engine. It was a small fire-engine, and had an air-chamber attached: the grant limited the price of the hand engine, with one barrel, to £6 in gold or silver, or equivalent articles. In 1791, the same State granted a patent to John Young, for curing smoky chimneys. His plan was to have a tube 3 inches in diameter at the outside, running from out-door into the chimney, where its inner end, 1½ inches in diameter, projected upwards. A patent was granted, in 1717, by Pennsylvania, to Thomas Masters, for two inventions of his better half, Sybella Masters, the one for curing Indian corn, the other for weaving palmetta hats. These old reminiscences of American inventions are really interesting. We are glad that the Commissioner is going to consider their collection as part of his duty. We may expect some very interesting papers in the next Report.

Solders and Soldering.

Solders consist merely of simple or mixed metals, by which alone metallic bodies can be firmly united with each other. In this respect it is a general rule, that the solder should always be easier of fusion than the metal intended to be soldered by it; next to this, care must also be taken, that the solder be as far as possible of the same color with the metal that is to be soldered.

For the simple solders, each of the metals may be used according to the nature of that which is to be soldered. For fine steel, copper, and brass work, gold and silver may be employed. In the large way, however, iron is soldered with copper, and copper and brass with tin.

The most usual solders are the compound, which are distinguished into two principle classes, viz., hard and soft solders. The hard solders are ductile, will bear hammering, and are commonly prepared of the same metal with that which is to be soldered, with the addition of some other, by which a greater degree of fusibility is obtained, though the addition is not always required to be itself easier of fusion. Under this head comes the hard solder for gold, which is prepared from gold and silver, or gold and copper, or gold, silver, and copper. The hard solder for silver is prepared from equal parts of silver and brass, but made easier of fusion by the admixture of a sixteenth part of zinc. The hard solder for brass is obtained from brass mixed with a sixth, or an eight, or even one-half of zinc, which may also be used for the hard solder of copper. It is sold in the shops in a granulated form, under the name of spelter-solder.

The soft solders melt easily, but are partly brittle, and therefore cannot be hammered. Of this kind are the following mixtures: tin and lead in equal parts; of still easier fusion is that consisting of bismuth, tin and lead, equal parts; 1 or 2 parts of bismuth of tin and lead each 1 part.

In the operation of soldering, the surfaces of the metal intended to be joined must be made very clean, and applied to each other. It is usual to secure them by a ligature of iron wire, or other similar contrivance. The solder is laid upon the joint, together with sal ammoniac or borax, or common glass, according to the degree of heat intended. These additions defend the metal from oxidation. Glaziers use rosin; and pitch is sometimes employed.

Tin-foil applied between the joints of fine brass work, first wetted with a strong solution of sal ammoniac, makes an excellent juncture, care being taken to avoid too much heat.

Plumbers' solder is an alloy of 3 parts of lead and one of tin: it is more fusible than lead, and adheres well to clean surfaces. Fine solder is a mixture of two parts of tin and one of lead, it fuses at 360°: it is used for tinning copper. Lead plates are soldered, or rather fused, together by the oxy-hydrogen blow-pipe, without any solder—this is the best way. Tin sheets can be soldered by using a composition of the chloride of zinc, (zinc dissolved in diluted muriatic acid.) This solution is put on the joint with a feather, in place of rosin, and the solder applied in the usual way. The rosin, however, is just as good. Iron plates can be soldered with common solder, by using the chloride of zinc mixture. In soldering metals, it is requisite to have the solder fusible at a heat a little below the metal to be soldered. In soldering thin zinc pipes, it is necessary to be very careful, as much depends on practical skill as upon any thing else. Soldered joints appear more bright than the metal of the pipes soldered. The reason of this is, that the pipes are just as bright when new, but oxidize when exposed for some time to the air, while the joints are covered with a thin coat of varnish, formed by the rosin, which protects them from oxidization.

Paisley Shawls. British Taxation.

Many of our orators use the term "pauper labor of Europe," as one of reproach. This they never should do, because the expression is based upon falsity. We would like to know what *pauper* labor is. No man who works for a living can be a pauper. The producers are the salt of a government, yet it is too often the case that governments look upon the workers as paupers. This is true, especially, of the Government of Great Britain: she legislates for the workingmen to pay enormous taxes, and acts as if the crumbs which fell from the rich men's tables were good enough for them. Great Britain has ever acted towards her own children in a far worse manner than towards any of her colonies. No people in the world are so much oppressed with taxes, as the working people of Great Britain. It is wonderful how they stagger under them, and compete with other nations.

There is one article of British manufacture, in which the government favors both the German and French manufacturers more than her own, that is the manufacture of fine Paisley Shawls—the kind which are almost exclusively worn in America, by rich and poor—not the plaid, but harness kind. The fine Paisley Shawls are made by manual labor, and the numerous shades of color which are used, each demanding a separate shuttle, render hand-loom weaving indispensable.

The cashmere wool is freely used, but as fine shawls are now made from Australian wool, as from any other in the world. Finely woven wool shawls often pass for the real cashmere.

For their patterns, the Paisley manufacturers are indebted both to India and France, but more for the general idea of what will work well than for any pattern. There is one shawl now in contemplation, by Mr. Robert Kerr, of Paisley, for the World's Exhibition, and the cost of preparing the jacquard to work it will be more than $2,000,—a duty of $500 on this amount is paid to the government, for card paper for the pattern: such a tax is shameful. German shawls can be taken into Britain on a duty of 10 per cent. paid, but the duty on Paisley shawls is so heavy in France, Germany, Italy, Spain, and Portugal, that it almost amounts to a prohibition, ranging as it does between 30 and 75 per cent. The long shawls being more esteemed than the square ones, and considered articles of luxury, it is by no means unusual for dealers to cut the former in two, in order to evade the higher duty, and to have the two halves fine-drawn together afterwards. These shawls are greatly admired on the Continent of Europe, as well as in America. A new shawl lately adopted by the Parisians is called the "Paisley."

Mr. Kerr communicated with the government to try and get a draw-back for the duty on his card paper, but he met with the usual incivility, proverbial in officers of the British Government. Mr. Kerr published a letter in the Glasgow "Daily Mail," taking for his text, "Of whom do the kings of the earth take tribute," in which he fairly branded the tax gatherers of Britain as brown as molasses cakes.

New Fabric.

A new article for clothing has just been patented in England, made of the fur of animals and designed for winter wear. The fabric is said to be lighter, firmer and warmer than that of materials now generally worn.—The fabric is also made partly of fur and partly of silk, and is as soft as satin or the finest lamb's wool. Under garments are made of it without seams, also gloves and stockings.

[The above is an extract from one of our exchanges, and from the description we must consider it a species of felted fur, otherwise how can it be made into garments. In the above we are told "it is as soft as satin or the finest lamb's wool,"—there is a wonderful difference, we should think.

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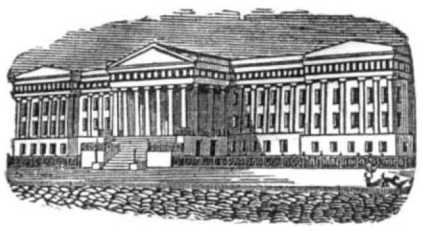

☞ Reported expressly for the Scientific American, from the Patent Office Records.

LIST OF PATENT CLAIMS
Issued from the United States Patent Office.

FOR THE WEEK ENDING NOVEMBER 27, 1850.

To F. J. Ayres, of St. Johns, N. B., for improvements in machines for feeding nail plate.

I claim the combination of such raising mechanism, with the machinery for imparting to the strip of metal its progressive forward movements as specified, the mechanism so combined with the said machinery being the bale, the rod, the lever or arm, the crank, shaft, drum, two belts, and two arms of the lever beam, the whole being arranged and made to operate together, substantially as specified.

And further, I claim, in combination with the mechanism which produces the progressive advancing movements of the strip of metal towards and between the cutters, the mechanism for producing the retrograde movement of the pincers, after the strip of metal has been entirely operated upon by the cutters; such mechanism being the two pullies, the endless belt, the movable frame and clutch, or their equivalent, the vertical rock shaft and its two arms, the two cams, the lifting bar and its spring catch, together with the slide and its projections, the whole being constructed and made to operate together, essentially as specified.

And I claim the combination of the arms with the shaft, and the mechanism for moving the clutch, the said arm being for the purpose of creating a retrograde movement of the clutch, so as to unclutch the pulley from the shaft, and this when the entire retrogradation of the nippers has been effected, the same being accomplished as hereinbefore specified.

And in combination with the mechanism which produces the reciprocating rotary movements of the nippers or strip of metal held thereby, I claim the combination of mechanism for arresting or stopping such rotary motions, immediately on the final retrogradation of the pincers taking place, such mechanism being the two levers, the connecting rod, arm, shaft, spring catch, as applied together, and to the lever beam and lifting bar, as described.

And I claim the combination of mechanism by which the progressive advancing and intermittent secondary retrograde movements of the strip of metal are produced, the same consisting of the long arm and its connecting frame, the feed and pressure rollers, the shaft and pulley, the strap or belt and its two rods, the levers (two) connected together as described, and the two cams on the shaft.

And in combination therewith and the lifting bar, I claim the bent lever, the same being applied to the same, and used for the purpose, substantially as hereinbefore described.

To E. G. Allen, of Boston, Mass., and Chas. Briggs, of New Bedford, Mass., for improvement in Cutters for Planing Machines.

We claim arranging a series of shaving knives, in continuous succession, upon the periphery of a carroidal wheel, whereby a continuous serrated shaving instrument is produced, whose uninterrupted action, by preventing jarring, produces a smoother surface.

To Ralph Bulkley, of New York, N. Y., for improvement in Ship Ventilators.

I claim the combination of floatable valves, with ventilators, for ventilating vessels and steamers, and the combination of floatable valve ventilators with vessels and steamers. The valves to be acted upon by the rising and the falling of the water when in contact with the ventilator. The rising water to cause the valve to close the air orifice and prevent the entrance of water, and the falling water to permit the valve to recede by its own gravitation, and thereby open the air orifice. The devices and operations of the same, as herein described, for the objects and purposes herein set forth.

To Henry Cowing, of New Orleans, La., for improvement in Gang Plows.

I claim the inclined cutters, so arranged as to throw out the plows without breaking, when they meet with an obstruction, in the manner and for the purpose set forth.

I claim the apparatus for setting the frames for hilling, in the manner above specified.

To M. G. Hubbard, of Geneva, Y., N. for improvements in Hanging Carriage Bodies.

I claim the combination of elastic cross reaches, with a non-elastic centre support, the reaches being so connected with the centre support that they shall be free to bend throughout their length, substantially in the manner and for the purpose described.

To M. Y. Johnson, (administrator of J. H. Johnson, deceased), of New Orleans, La., for improvement in processes for rendering cordage uninflammable.

I claim the process of rendering vegetable fibrous substances, uninflammable and preserving them in that condition, as set forth.

To C. W. Krebs, of Baltimore, Md., for improvement in Fountain Pens.

I claim the nib pen made to project through the conical termination of the fountain, substantial in the manner and for the purpose set forth, and in connection therewith I claim making the pen nib adjustable, substantially as described.

To H. H. May, of Galesburgh, Ill., for improved method of securing rails of railroads.

I claim the diagonal position of the horns, by which, with the aid of the arms and clamps, the rails are secured in their proper position.

To Simon McNair, of Hatborough, Pa., for improvement in Sausage Stuffers.

I claim the introduction of a tube, or case, into the cage of a press, and adapting it thereto, in such a manner as to form a sausage-stuffer in combination therewith, which is operated by the same power, and under the same piston and rod that acts upon the press, as herein substantially set forth.

To T. J. Sloan, of New York, N. Y., for improvements in Screw Threading Machines.

I claim the before-described method of operating the jaws for griping and liberating the blank by means of the toggle joint and rod connected therewith, when this is combined with the method described, of latching and unlatching the rod by means of the sliding collar acting on the inclined or bevelled stem of the rod, to draw it back, and force in the latch, and then holding it in place by passing on to it, so as to avoid an end-wise strain on the mandrel against its boxes, substantially as described, and for the purpose specified.

I also claim so connecting the mould which governs the line of motion of the chaser with the sliding frame, that it shall be free to vibrate therein, substantially as described.

To Joshua Stevens, of Chicopee, Mass., for improvement in the locking apparatus for repeating firearms.

I claim bringing the dog, or catch, of the bolt, in combination with so making and applying the recess, and the spring together, and to the dog or catch, to cause said spring to perform two functions, or not only to operate the dog or catch, but to operate the bolt, essentially as described.

To T. T. Willcox. of Norwich, Conn., for improvement in Shuttle motions in Looms.

I claim the boxes, P P, oscillating upon fixed points, S S, and having the flat bar springs, Q Q, attached to them, in combination with the chains, C C, and the regulating screw, D, and nut, E, for giving a more free and easy motion to the picker staves, and for the more effectually controlling and graduating the amount of pick.

[This is a very beautiful arrangement for operating the picker staves.]

To Loftus Wood, of New York, N. Y., for combined Boiler Cupola and Grate.

I claim the boiler descending from the top to the bottom of the cupola, in combination with the removable grate, the water contained in the boiler surrounding the heated iron and coals, substantially as described.

I do not claim the use of the subsidiary grate, but I do claim it as making a part of the combination necessary to the proper and perfect action of my combined steam boiler and cupola smelting furnace.

To Loftus Wood, of New York, N. Y., for improvement in Cooking Stoves.

I claim placing one or more ovens between one or more fires on each side, in connection with a vertical flue or flues passing between the ovens, separating them substantially as described.

DESIGNS.

To Wm. B. Gleason, of Boston, Mass., (assignor to James Hartshorn & W. Ames, of Nashua, N. H., (design for Stoves.

For the Scientific American.

Gravitation—What it is.

"Gravitation is that property of matter by which it resists a change of state, with respect to motion or rest."

This will, no doubt, be considered a sweeping declaration. A careful examination of the subjoined reasoning is, therefore, requested to be made, and communicated through this paper, in which the most rigid truthful criticisms will be acceptable.

Action and re-action are equal, and the greater the quantity of matter to be moved with any given velocity, the greater the required force, and consequent resistance. When we attempt to lift a stone from the earth, we experience an opposing force, which we call gravitation, and wonder at the mysterious nature of the law. But how can rational beings expect to move a body without experiencing resistance? Upon no other condition can force be applied, otherwise matter would be no matter—it would possess a name but no quality.

To establish the position that the resistance to the force by which a body is moved, will, independently of any other property of attraction, impede its motion, cause it to stop, and again retrograde; let us inquire more particularly into the philosophy of force and resistance. In order to originate motion in a body, and continue the same at a uniform rate, it is necessary to urge it continually; for, upon the first impulse, a resistance equal to the active force is manifested, and it is evident that upon a sudden withdrawal of the latter, after a very inconsiderable length of time, this property of resistance must cause an immediate decrease in the velocity; but as its power to re-act must be subdued more and more, as the propelling force is continued, therefore, the longer the body is driven at a uniform rate, the less must be its consequent re-action; while the simple fact that the resistance cannot be instantaneously overcome, is proof sufficient that it never could be, though it were driven at an equable rate for any imaginable period of time: thus, it will be seen, that unless the propelling force, by which the body moves, is continually applied, it can not be denominated a constant force; while its re-acting quality, not being subject to like dependencies, *must be;* and a temporary force must eventually be overcome by a constant force, be their difference what it may, when acting in opposite directions.

To show more clearly, if possible, that the re-action of a driven body is a constant force, calculated to overcome its velocity and cause its motion to terminate, from which it will again retrograde, let us reverse the order of its movements assumed in the preceding illustration; for as motion and rest are only relative terms, while in an absolute sense they are the same, and consequently nothing at all; therefore, the relative motion between two bodies may, with equal propriety, be referred wholly to the one or to the other, or to both.

Let us now assume the propelling force, and the driven body of that illustration, to manifest the same property of mutual pressure, as before, though destitute of motion, (for it can make no difference,) and instead of a sudden stop in the former, (assumed also to be a body;) let it be conceived all at once to recede from the latter at a uniform rate, and it will be evident that the pressure of the other in the same direction, will instantly begin to move it accordingly; and as a constant force can not be applied to a moving body without accelerating its motion, therefore it must eventually overtake the other which moves at a uniform rate. Should the re-acting force of a body, driven at an equable rate, be found to decrease inversely with the square of the distance, of which there is a high probability, it may furnish the true reason why the force of gravity diminishes in the same ratio.

If this is the true philosophy of gravitation, then we are at once introduced to the true reason why its force is always in proportion to the quantity of matter. When we lift a stone from the earth, we separate two bodies, containing a vast amount of matter, for which reason we experience a great opposition. When the stone is small, it leaves the earth to move only a small distance, it is true, but as all motion is mutual, and proportional to the two bodies themselves, the earth must, upon the lifting of the stone, recede her proportion. When we double the volume of the stone to be raised, then, although the quantity of matter contained in both is the same, yet because the earth, the greater of the two, is obliged to recede twice the distance, we experience twice the difficulty in raising it; we therefore say, the stone has twice the weight of the former.

If we make the greater of two bodies the measure of the decrease of resistance, or, if you please, of gravitation, then a rifle ball, could it be forced in a perpendicular direction for five or six thousand miles, would not have its force of re-action overcome to a greater extent upon moving four thousand miles, than would result from the flight of half a mile, were it projected with the same velocity from a body only one mile in diameter. A body projected in a horizontal direction is not under the same law of retardation, because there is no considerable body from which it is separated, and a motion is only relative, therefore horizontal motion in a body, describing a circle round the earth, can not, in an absolute sense, be conceived to be different to no motion at all; while the apparent motion is as justly ascribable to a rotation of the earth, as to a revolution of another body.

When we wish to move a body in a horizontal direction, we must, it is true, brace against the earth; but as it requires only about one-third the force to reel a body upon its centre, that it does to move it bodily, therefore the same force is not requisite to move it in this direction. But we can move a weight, not only about three times greater in a horizontal than in a perpendicular direction, but even ten, fifty, or a hundred times as great. The reason is plain, there being no separation of bodies, there can be no re-action in a direction towards each other—the force, therefore, thrown upon the body is constant, and although we can scarcely see the effect at first, yet, as the force is every instant accumulating, therefore, by continued pressure, we can move a much greater body in a horizontal than in a perpendicular direction.

But if the force of gravity depends on the cause herein described, why should this property be so universal? The answer is this: The elements of matter are unoriginated, hence they have already passed through an infinite number of modifications, in which every particle of matter has been associated with every other particle, from which it has since been projected; and as the consequent re-action must likewise be universal, and in proportion to the square of the remove from every other object, therefore a tendency to return with an equivalent force must also universally exist. W. K.

Question about Patent Property.

A owns the patent for a machine, but sells the right for the State of Mississippi to B; B ascertains that C, of Connecticut, can furnish those machines, delivered in Mississippi, or some intermediate place, subject to his order, cheaper than he can get them in his own State. Has C a legal right to manufacture the said machines in Connecticut, and deliver them to the order of B, without the consent of A? W. & M.

[Answer—If C owns the patent right for the State of Connecticut, he can manufacture for B; but if some other person owns the right of Connecticut, then he cannot make for B. The rights of a patent extend to the *making*, *using*, and *selling*. If C and B owned the rights of two separate States, then they may make any bargain they like about making, using, and selling in those two States, for they cannot infringe any other person's rights. Ed.

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TO CORRESPONDENTS.

"O. C., of Ohio."—We believe that your improvement on scythes is patentable, but we are not able to give the information about procuring the material you speak of.

"T. A. P., of L. I.—We never saw malleable glass, and are sure that it cannot be found here or elsewhere.

"N. M., of Vt."—We are not sufficiently versed in Horology to answer you. In Reed's work you may find a full answer to your inquiry.

"R. H., of Mass."—The common means now in use, and all the means we have ever known practiced, both in Europe and at home, on our railroads, is by signals—the waving of different colored flags by day, and lanterns by night.

"P. S. W,, of N. C."—You will require two works, both will cost you $4,50—The one is Dana's Manual, and the other his System of Mineralogy.

"G. A., of Geo."—You could not secure a patent for dragging a balloon by a horse, on the earth, and it would be a waste of money to try such a project, for assuredly it would cost more than you would gain by the operation.

"J. S., of Ohio."—It is not possible to tell your power by the way you propose. The quantity of water discharged in one minute, and the height of the fall, are necessary for that purpose. Six cubic feet of water discharged per minute, with a fall of 18 feet, amounts to 8 1-5 horse power. The effect of water is as the perpendicular height and the quantity discharged in a given time.

"P. K., of Ky."—The screw for propelling steam boats has been applied to double steamboats before; there is nothing new it; you are therefore advised not to make an application for letters patent.

"A. J. M., of Ind."—There is no good work we know of, except the one of Scram, relative to the Croton Water Works; the price is $3, but we do not know who keeps it for sale.

"K. G., of Ill."—We cannot comprehend what you are driving at; such sketches as you send are rather too much for our imagination. We do not allow any one to tax us with impunity. Whenever you can decide by experiment which rake you think is best, you can consult us as to its patentability—not before We are not illiberal in affording inventors the best advice we have to give; but when four or five inventions are submitted, of the same thing, for us to decipher out and decide which is best, we claim the right to say, it is coming it rather strong.

"D. E., of Mass."—Your sketch of improvements in spinning hemp have been examined. You will find, by reference to a patent granted to Garret Van Riper, of Jersey City, Dec. 4, 1849, that he covers all the points claimed by you. He claims the use of the circular-headed flyer, having a circular head at each end,—this gives steadiness to the flyers, as it operates as a regulator.

"H. B., of Miss."—Your device is entirely different in principle from the one patented by Mr. J. The result produced is the same, but the means of accomplishing it are essentially different.

"T. C., of Mo."—Many patents have been granted within the past few years for improvements in grain separators; yours may be new. We can give you a more satisfactory opinion after having examined a model. You can send it by express from St. Louis.

"C. G., of Me."—No patent was granted to Mr. W., in January last; his statements are incorrect, without doubt. This species of deception is not countenanced by the statutes.

"J. R. O., of Indianapolis."—No. 1 of Vol. 4 cannot be supplied from this office. We have been out of that number for some time.

"W. W. H., of Mass."—Your poetry, although very good for the kind, is not suited to our columns. Your contributions would be of no value to us unless they related to the arts and sciences.

"C. H. McC., of Ill."—Your favor is most kindly received. Everything is all right.

"G. W. H., of N. Y."—We thank you again—and have entered Mr. G.'s name in conformity with your request.

"W. F. F., of Geo."—Yours will appear next week.

"M. N., 2nd., of Pa."—Your letters patent came safe by express, on the 3rd inst. The engravings will be prepared as soon as possible.

"Capt. R. F. L.. of Phila."—The engravings of your improvements are now being prepared; they will appear in our next.

"H. S., of N. Y."—You will see, by reference to our advertisement in another column, that we attend to the procuration of Letters Patent in foreign countries. We have done considerable in this way through our attorneys there, Messrs. Barlow & Co. We are prepared to undertake your case as soon as you can attend to it.

"R. H., of N. Y."—You will find something to suit you on our first pages.

"L. N., of S. C."—we have got sowe information about boilers which we will publish soon.

"S. J. K., of N. Y."—We cannot give you an answer, because your letter is too long for us to read. We cannot afford the time.

H. P.; R. F. H., of S. C., and A. B., of Geo.—Your letters will be answered as soon as we can collect the information you desire. We hope to be able to answer them in full.

L. W. P., of N. Y.; H. B., of Mass.; O. C., of Ohio.; J. G., of R. I., J. P., of Ky.; K. & P., of Conn.—

Your specifications and drawings have been forwarded to the Patent Office since our last issue.

Money received on account of Patent Office business, since Nov. 27, 1850:—

J. W., of N. Y., $30; M. M. I., of Geo., $5; H. B., of Mass., $37; W. R., of Mass., $20; J. P., of Ky., $20; C. C., of N. J., $36.

An Important Paragraph.

To preclude our subscribing friends the necessity of writing for the back numbers of the Scientific American, we shall forward to all new subscribers the back numbers of Vol. 6, dating their subscriptions from the commencement unless they instruct to the contrary when they remit. We shall pursue this course of sending the back numbers issued on this volume until No. 13, and after that time the names will be entered from the date of the reception of orders, unless the writer expresses a wish to receive the back Nos.—in that case they will be promptly forwarded.

Those desiring volume 5 of the Scientific American are informed that we are able to furnish a few complete volumes, (bound) at $2,75 each. Also, we can send by mail sets complete, minus No. 1, for $2. We would also say, that whenever our friends order numbers they have missed—we shall always send them, if we have them on hand. We make this statement to save much time and trouble, to which we are subjected in replying, when the numbers called for cannot be supplied.

Patent Claims.

Persons desiring the claims of any invention which has been patented within fourteen years can obtain a copy by addressing a letter to this office; stating the name of the patentee, and the year the patent was granted (adding the month of the year when convenient), and enclosing one dollar as fee for copying.

A MANUFACTURER WANTED.--I wish to employ for a term of years, a man of industrious habits, good moral character, not more than 40 years of age, qualified to manage and superintend hands in a cotton and spinning factory, and who is a first rate carder and spinner. The location is a healthy one, machinery propelled by water, 700 to 1000 spindles; salary liberal. Nothing short of the most satisfactory recommendations will be considered. Address the subscriber, immediately, at McMinnville, Tenn. WILLIAM BLACK.
Central Factory, Tenn., Nov. 25, 1850. 12 4

PATENT BREAD CUTTER.--The subscriber is now prepared to sell rights for a single State, or for all the States, except Connecticut, Vermont and Maine, on liberal terms. The Cutter will be wanted in almost every family, and will sell readily at a large profit to the manufacturer. Personal application, or by letter (post-paid) directed to the subscriber at Berlin, Conn., will receive prompt attention. FRANKLIN ROYS.
12 10

FOR SALE--A good second-hand Steam Engine, 9 inch cylinder, 25 inch stroke, with two cylinder boilers, 20 feet long, 2 feet diameter, with 10 inch flue in each. Also, one second-hand Steam Engine, 8 inch cylinder, 32 inch stroke, with one boiler, 3 feet diameter, 22 feet long, with one 16 inch flue, re-fitted in good order. CHUTE, BROTHERS.
12 4*

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One square of 8 lines, 50 cents for each insertion.
" 12 lines, 75 cts., " "
" 16 lines, $1,00 " "

Advertisements should not exceed 16 lines, and cuts cannot be inserted in connection with them for any price.

Patent Office.

128 FULTON ST.

NOTICE TO INVENTORS.--Inventors and others requiring protection by United States Letters Patent, are informed that all business relating to the procuration of letters patent, or filing caveats, is transacted at the Scientific American Office, with the utmost economy and despatch. Drawings of all kinds executed on the most reasonable terms. Messrs. Munn & Co. can be consulted at all times in regard to Patent business, at their office, and such advice rendered as will enable inventors to adopt the safest means for securing their rights.

Arrangements have been made with Messrs. Barlow and Payne, Patent Attornies, in London, for procuring Letters Patent in Great Britain and France, with great facility and dispatch.

MUNN & CO.,
128 Fultonstreet, New York.

AMERICAN AND FOREIGN PATENT AGENCY.

WE WOULD remind our numerous friends throughout the country, that we still continue to conduct the business of procuring Letters Patent for new inventions in this and all foreign countries, where the right is recognized Since making arrangements with those eminent attorneys, Messrs. Barlow, Payne & Parken, Editors of the London Patent Journal, we have secured and managed through them, several foreign applications, with the utmost economy and facility. Inventors and others, desiring advice upon this subject, can correspond confidentially with the Editors of this paper.

ALCOTT'S CONCENTRIC LATHES.—We have on hand a few of these celebrated Lathes, which the inventor informs us will execute superior work at the following rates:—

Windsor Chair Legs and Pillars, 1000 per 11 hours. Rods and Rounds, 2000; Hoe Handles, 800; Fork Handles, 500; Broom Handles, 1500, per 11 hours.

This Lathe is capable of turning under two inches diameter, with only the trouble of changing the dies and pattern to the size required. It will turn smooth over swells or depressions of 3-4 to the inch, and work as smoothly as on a straight line, and does excellent work. Sold without frames for the low price of $25—boxed and shipped, with directions for setting up. Address, (post paid) MUNN & CO.,
14tf At this Office.

IMPORATANT NOTICE TO CONFECTIONARY MAKERS—Whereas, a patent was granted to the undersigned, Oct. 8th, 1850, for an improvement in the manufacture of Comfits, and from certain knowledge which he has received, he believes that parties are using it without his consent. Vigorous measures are now being taken to ascertain who the unprincipled parties are, in order that they may be dealt with according to law. This notice is to warn all not to infringe the patent, as it is not the intention of the patentee to dispose of rights. Parties using it will have no authority. W. H. HOLT, Patentee.
Hartford, Conn., Nov. 25, 1850. 11 8*

THE SUBSCRIBER is now finishing four 14 horse engines, with boiler and apparatus all complete—price $1200 each. Several 6 horse engines extremely low; also, several of smaller capacity, complete; also, several power plainers, now finishing.—Galvanized chain for water elevators, and all fixtures—price low—wholesale and retail. Orders, post-paid, will receive prompt attention. AARON KILBORN.
No. 4 Howard st., New Haven, Conn. 11 6*

BAILEY'S SELF-CENTERING LATHE, for turning Broom and other handles, swelled work, chair spindles, &c.; warranted to turn out twice the work of any other lathe known—doing in a first rate manner 2000 broom handles and 4000 chair spindles per day, and other work in proportion. These lathes are simple in construction, not liable to get out of repair, and will do enough more than other lathes, in three months' use, to pay their cost. One of them may be seen at the office of Munn & Co., New York. Price of Lathe for turning broom and hoe handles, rake stales, scythe snaths, windsor and cottage chair legs and pillars, $100, with one set of tools; $125 with two sets. Lathe for turning chair spindles, whip stocks, gun rods, &c., complete, $75. Orders, post-paid, may be forwarded to L. A. SPALDING, Lockport, N. Y. 93m

MACHINES FOR CUTTING SHINGLES. The extraordinary success of Wood's Patent Shingle Machine, under every circumstance where it has been tried, fully establishes its superiority over any other machine for the purpose ever yet offered to the public. It received the first premium at the last Fair of the American Institute—where its operation was witnessed by hundreds. A few State rights remain unsold. Patented January 8th, 1850,—13 years more to run. Terms made easy to the purchaser. Address, (post-paid) JAMES D. JOHNSON, Redding Ridge, Conn., or Wm. WOOD, Westport, Conn.. All letters will be promptly attended to. 10tf

COTTON MACHINERY FOR SALE—Viz. 4 filling frames, 144 spindles each; dead spindle, nearly new; 1 three head drawing frame, with extra rolls; 1 Mason's speeder, 16 strand; 1 lapper; 1 cone willower; 1 band machine; 1 bundling press; 1 warper—on very reasonable terms, by ELI W ITNEY.
New Haven, Nov., 1850. 9 6*

TO TIN PLATE AND SHEET IRON WORKERS.---ROYS & WILCOX, Mattabesett Works, East Berlin Station, on the Middletown Rail Road, manufacture all kinds of Tools and Machines of the best quality, both in material and workmanship. This establishment being the only one where both tools and machines are manufactured, superior inducements are offered to the trade; all work warranted, with fair use. Agents in most of the principal cities of the United States and Canada. Orders promptly attended to. F. ROYS,
E. WILCOX.
Berlin, Conn., Nov. 1, 1850. 7 1am1y

UNITED PATENT OFFICE IN PARIS AND LONDON.---GARDISSAL & CO., 29 Boulevard St. Martin, Paris, and No. 9 Arthur st. west, city, London. Patents procured in Great Britain and on the Continent: "Le Brevet d'Invention," weekly journal, published by the same firm. 3tf

TO HAMMERSMITHS.---Wanted, a Tilter. Apply to the N. Y. Cast Steel Works, foot of 24th street, East River, New York. 6tf

GURLEY'S IMPROVED SAW GUMMERS—for gumming out and sharpening the teeth of saws can be had on application to G. A. KIRTLAND, 205 South st., N. Y. 10 6

SCRANTON & PARSHLEY,—New Haven, Conn., will have finished by the 15th of December, 12 Engine Lathes of 8, 10 and 12 feet beds, and weigh 1500, 1650, and 1800 lbs; price $200, $220 and $240. These Lathes are from a new set of patterns, and are greatly improved from their former small size lathes; they swing 21 inches, and have back and screw gearing, centre rest, follow rest, drill, chuck and overhead reversing pulleys, all hung in a cast iron frame, ready for use. On and after the first of Dec., by addressing as above (post paid) cuts can be had of these, with index card, showing the different pitch threads that these lathes will cut.

Two of the power planers heretofore advertised in this paper, are now ready to ship to the first order; they weigh from 4500 to 4600 lbs., when finished. 9tf

A CARD.---The undersigned begs leave to draw the attention of architects, engineers, machinists, opticians, watchmakers, jewellers, and manufacturers of all kinds of instruments, to his new and extensive assortment of fine English (Stubs) and Swiss Files and Tools, also his imported and own manufactured Mathematical Drawing Instruments of Swiss and English style, which he offers at very reasonable prices. Orders for any kind of instruments will be promptly executed by F. A. SIBENMANN, Importer of Watchmakers' and Jewellers' Files and Tools, and manufacturer of Mathematical Instruments, 154 Fulton street. 1 3m*

TO PAINTERS AND OTHERS.—American Anatomic Drier, Electro Chemical graining colors, Electro Negative gold size, and Chemical Oil Stove Polish. The Drier, improves in quality, by age—is adapted to all kinds of paints, and also to Printers' inks and colors. The above articles are compounded upon known chemical laws, and are submitted to the public without further comment. Manufactured and sold wholesale and retail at 114 John st., New York, and Flushing, L. I., N. Y., by QUARTERMAN & SON,
9tf Painters and Chemists

COTTON, WOOLEN AND SILK MANUFACTURERS' DEPOT.—ANDREWS & JESUP, No. 70 Pine st., N. Y., dealers in articles for the use of Cotton, Woolen and silk manufacturers, and agents for the sale of shearing, carding, burring, napping, wool-picking, flock-cutting and waste machines, regulators, satinet and jean warps, &c. Weavers' reeds and heddles, bobbins and spools, of every description, made to order. Sperm, lard and olive oils and oil soap. 1tf

MACHINERY.—S. C. HILLS, No. 12 Platt Street, N. Y., dealer in Steam Engines, Boilers, Iron Planers, Lathes, Universal Chucks, Drills Kase's, Von Schmidt's, and other Pumps, Johnson's Shingle machines, Woodworth's, Daniel's and Law's Planing machines, Dick's Presses, Punches, and Shears; Morticing and Tennoning Machines, Belting, machinery oil; Beal's patent Cob and Corn Mills; Burr Mill, and Grindstones, Lead and Iron Pipe, &c. Letters to be noticed must be post paid. 10tf

MATTEAWAN MACHINE WORKS.—Locomotive Engines, of every size and pattern. Also tenders, wheels, axles, and other railroad machinery. Stationary engines, boilers, &c. Arranged for driving cotton,, woolen and other mill. Cotton and woolen machinery of every description, embodying all the modern improvements. Mill geering, from probably the most extensive assortment of patterns in this line, in any section of the country. Tools, turning lathes, slabbing, plaining, cutting and drilling machines. Together with all other tools requried in machine shops. Apply at the Matteawan Co. Work, Fishkill Landing, N. Y., or at No. 66 Beaver st. New York City, to
11tf WILLIAM B. LEONARD, Agent.

LAP-WELDED WROUGHT IRON TUBES for Tubular Boilers, from 1 1-4 to 7 inches in diameter. The only Tubes of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine, and other Steam Engine Boilers.
THOS. PROSSER & SON, Patentees,
8tf 28 Platt st., New York.

HISTORY OF PROPELLERS.---This interesting and useful volume, compiled by one of the Editors of the Scientific American, from articles previously prepared for, and published in, Vol. 5 of that paper, is now ready for the Trade. It contains 144 pages of letter-press, and 82 illustrations, embracing views of nearly every kind of propeller that has been invented. This work is beautifully bound in cloth, and is sold at the low price of 75 cts. We also have them in paper covers, for mailing—price as above. Address MUNN & CO., at this Office.

FOREIGN PATENTS.—PATENTS procured in GREAT BRITAIN and her colonies, also France Belgium, Holland, &c., &c., with certainty and dispatch through special and responsible agents appointed, by, and connected only with this establishment.—Pamphlets containing a synopsis of Foreign Patent laws, and information can be had gratis on application
JOSEPH P. PIRSSON, Civil Engineer,
46tf Office 5 Wall street, New York.

BOSTON LOCOMOTIVE WORKS---No. 380 Harrison avenue, Boston, manufacture at short notice, Locomotive and Stationery Steam Engines, boilers,—iron, copper, composition and brass castings; copper work; Van Kuran railroad car and truck wheels, and all kind of railroad machinery.
DANIEL F. CHILD,
1tf Treasurer Boston Locomotive Works.

FELLY CUTTING MACHINE.—MESSRS. JOSEPH ADAMS & SONS, Amherst, Mass., offer for sale town, county and State rights, or single machines, with the right to use, of this unrivalled Felly Cutting Machine, illustrated in No. 5, Vol. 6, Scientific American. It is portable, easily kept in order, requires but little power to drive it, and will execute in the most rapid and perfect manner, cutting 60 good fellys in one hour. 6tf

RAILROAD CAR MANUFACTORY.--TRACY & FALES, Grove Works, Hartford, Conn. Passage, Freight and all other descriptions of Railroad Cars, as well as Locomotive Tenders, made to order promptly. The above is the largest Car Factory in the Union. In quality of material and in workmanship, beauty and good taste, as well as strength and durability, we are determined our work shall be unsurpassed. JOHN R. TRACY,
5 tf. THOMAS J. FALES.

FOWLERS & WELLS, Phrenologists and Publishers, Clinton Hall, 131 Nassau st., New York—Office of the Water Cure and Phrenological Journals. Professional examinations day and evening. 3 6m

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Scientific Museum.

Scientific Memoranda.

Mice Power.—A gentleman in Kirkalda, Scotland, has trained a couple of mice and invented machinery enabling them to spin cotton yarn. The work is so constructed that the common house mouse is enabled to make atonement to society for past offences, by twisting twine, and reeling from 100 to 126 threads per day. To complete this, the little pedestrian has to run 10½ miles. A half-penny's worth of oatmeal, at 15d. per peck, serves one of these treadwheel culprits for the long period of five weeks. In that time it makes 110 threads per day. At this rate a mouse earns 7s. 6d. per annum. Take off 6d. for board and 1s. for machinery, there will arise 6s. clear for every mouse annually. The mouse employer was going to make an application for the lease of an old empty house, which will hold ten thousand mouse-mills, sufficient room being left for keepers, and some hundreds of spectators. Allowing for rent, masters, interest, and machinery, there will be a balance of $10,000 per annum.

The Voltaic Light.—An experiment was made on Saturday evening, in the chemical lecture room of the Polytechnic Institution, in the presence of a select party of scientific persons, to test the power of the voltaic light, for which Mr. Allman has obtained patents, and to prove that the light could be kept up continuously. The result, as far as the experiment went, was satisfactory, the light continuing without intermission to diffuse the most brilliant rays for several hours. This is considered a great advance in electric lighting, as in former experiments the spark has been intermittent and flickering. It is stated that the expense of lights of this class would be less than the expense of gas, even at the reduced rate, and that in the event of the invention being brought into general use, its expense would be greatly diminished. The brilliancy was of extreme intensity.—(London Sun.

[The cheapness of the electric light is the test of its utility as a substitute for other lights. All the experiments hitherto made have failed to produce a cheap light; there is no question about the brilliancy of the electric light, neither is there about the "Drummond light."

Nitrate of Silver.—"Nitrate of silver is the most important of the salts of silver, and is generally sold in shops in the shape of round sticks, of the size of a quill, and of a greyish or blackish color, of a lighter shade internally, which, when broken, exhibit a mass of little crystals, radiating from the centre. Pure nitrate of silver is in white anhydrous crystals, in the form of six-sided tables or thin plates, or in right rombic prisms, when obtained by slow evaporation. Nitrate of silver has no odor, but it has an extremely caustic, bitter, metallic taste; nitrate of silver is very often contaminated by nitrate of copper, nitrate of chloride of lead, or adulterated with nitrate of potash, sometimes to the extent of one-third of its weight.

The Power of Coal.—J. F. W. Herschel gives the fullowing account of the force of steam generated by a given quantity of coal.

The ascent of Mount Blanc from the valley of Chamouni is considered, and with justice, as the most toilsome feat that a strong man can execute in two days. The combustion of two pounds of coal would place him on the summit.

The Menai Bridge, one of the most stupendous works of art that has been raised by man in modern ages, consists of a mass of iron, not less than four millions of pounds in weight, suspended at a medium height of about 120 feet above the sea. The consumption of seven bushels of coal would suffice to raise it to the place where it hangs.

The annual consumption of coal in London is estimated at 1,500,000 chaldrons. The effort of this quantity would suffice to raise a cubical block of marble, 2,200 feet in the side, through a space equal to its own height, or to pile one such mountain upon another. The Monte Nuvo, near Pozzuoli (which was erupted in a single night by volcanic fire,) might be raised by such an effort, from a depth of 40,000 feet, or about eight miles.

The Functions of the Liver a sitting of the French Academy of Sciences, on the 31st of September last, Mr. Claude Bernard submitted a communication on the functions of the liver in man and in animals:—

I am about," he said, "to demonstrate experimentally that the presence of sugar in animal organism is a constant and indispensable fact in the regular accomplishment of the phenomena of nutrition; 2d, that the presence of the sugary matter in animals is not to be referred to any particular alimentation, but is aused, in the liver, by a special function of that organ 2d, that by the principal traits of this formation of liver, it is seen that the formation belongs immediately to the influence of the previous systems."

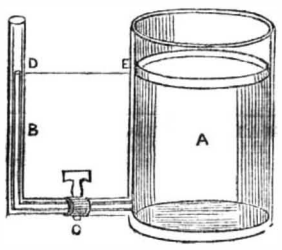
As the result of his researches and reasoning, he makes these statements:

The liver has thus two functions: to wit, on one hand, the secretion of bile and on the other, the production of sugar. This latter function begins to be performed before birth—for I have ascertained the presence of sugary matter in the liver of the fœtus of the mammifers and of birds at different periods of fœtal life. The sugar from the liver has all the characteristics of Glucose.

Hydrostatics.

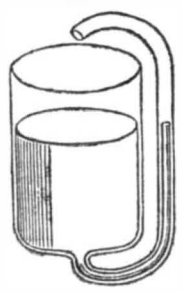
(Continued from page 88.)

Fig. 7.



In a liquid mass, such as has been heretofore under consideration, there is a point called "the centre of pressure," where all the pressures are equally balanced. This point is always lower than the centre of gravity. In a vessel whose sides are parallelograms, the centre of pressure is at one-third from the base. In a wedge-shaped vessel resting on its base, the centre of pressure is at one-fourth of the vertical, reckoning from the base, but if such a vessel stand on its apex, the centre of pressure then bisects the vertical. When a number of vessels communicate with each other, whatever be their form or size, the same conditions of equilibrium apply to the fluid contained in them as to a single vessel. In the first place, the surfaces of the fluid in the vessels are all level; and, secondly, they are all at the same level, provided the same fluid be used. Thus, on filling the large vessel, A, with water, or mercury, or any other fluid, it will exert a pressure on the side tube, near the bottom, equal to the area of the tube × the height, × by the density of the fluid; and,

Fig. 8.



on opening the stop-cock, C, this pressure will cause the fluid to ascend into the small vessel, B, until it attains the same level as in A, when equilibrium will be established, because the water in A, as well as the water in B, presses upon the same space at C, and both are of the same height.

It may well be asked, then, "If water presses equally in all directions, why does not the greater mass in A cause the small quantity to overflow?" A certain wise man once constructed figure 8 so as to get the large mass to press the water out of the small tube, and fill up the large one by its own weight or pressure, thus to conquer that great problem, "perpetual motion," but he found out that the fluid in both stood exactly at the same level.

Improvements in Tanning Leather.

We were shown yesterday several specimens of leather tanned in a very short time, by a process of which Mr. J. D. Dexter is the inventor. The main feature of the invention consists in a compound of chemicals, by which not only time, money, and labor are saved, but the leather thus prepared possesses more strength than that manufactured in the old way. This compound is called "Dexter's Electric process."

Messrs. A. Marshall & Co., are carrying on a pretty extensive business in tanning by this process at Nos. 27 and 29 Church street, in this city, and from them we have gathered the following facts in regard to this new mode of tanning skins into leather.

A sheep, calf, goat, or deer skin is taken in a green state, and in from eight to ten days it is manufactured into leather and is ready for market. From four to six days are consumed in preparing a skin for tanning, in the removal of the wool, hair, &c.; it is then thrown in a tub, and washed in three chemical preparations, which takes from one to two minutes; it is then taken out and dried, and in twenty-four or forty-eight hours after it is taken from the tub it is ready for market. The time occupied in drying depends much upon the weather; but after it is thoroughly dried it can be finished in about twenty minutes or half an hour. Under the old system of tanning, it takes from three to four weeks to prepare the skin, and from three to six months to bark tan and finish it.

By the discovery of this new process, a skin is converted into leather in as many days as it takes months to bark tan, and besides, it is not only stronger and more durable, but the leather is made water-proof. They can manufacture sheep-skins by this process into leather in six or eight days, which not only resembles calf-skin, but for boots and shoes it is preferred by those who have worn them, on account of its being more durable and softer than calf manufactured in the old way. By this method of tanning there is a great saving. One hundred sheep-skins can be tanned for 37 to 50 cents, while to bark tan them would incur an expense of at least $6.

At the same establishment, patent leather is manufactured out of sheep-skins, which is said to be more durable and less liable to crack than that made of bark tanned leather.

[The above is from the Albany Evening Journal: from the number of processes which have been brought before the public within the past two years, for the tanning of leather at so little expense in comparison with the old long systems, the price of leather should be materially reduced—if all be true that is said about the new systems.

For the Scientific American.

Worms on Snow.

Several years ago, I recollect reading in the newspapers of worms being seen crawling on the snow, with some queries about the manner in which they came there, and what might be their mission. For the gratification of the curious, I will state my observation on the singular phenomenon, which I recently witnessed. I was crossing a large open meadow on the morning of the 18th of Nov., the snow was about four inches deep, and falling moderately at the time, with a fresh breeze from the westward, the mercury standing at 34° Fah.; my attention was arrested by numerous creeping worms on the surface of the snow—they were lively and crawled about in various directions, apparently not at home on the frigid element. The ground was not frozen, but had been drenched with rain a short time previous. As to their natural location I will venture an opinion:—The worms were such as are common to grass lands, and seek a dry situation. The water drove them to the surface of the ground, and when the snow covered the ground, melting at the bottom, the worms again ascended to avoid the water.

Sangerfield, N. Y. P. B. W.

LITERARY NOTICES.

We are indebted to Messrs. Dewitt & Davenport. Tribune buildings, for No. 28 of Phillips, Sampson & Co.'s edition of Shakspeare's Dramatic Works. It contains the play of "Timon of Athens," with a beautiful engraving of Timandra. This work is progressing finely, and will be complete in about 12 numbers more.

Graham's American Magazine, for December, contains a sterling variety of matter, besides two beautiful colored plates of the December Fashions, a line and stipple, called "The Mariner's Beacon," by Smith, and a View of the Catskill Mountain House. This Magazine, in the hands of its present proprietor, G. R. Graham, Esq., has assumed a high and deserved rank among its many cotemporaries. This number closes the volume. Dewitt & Davenport, Agents.

The same publishers have laid upon our table the December number of Sartain's Union Magazine,—it is richly embellished with some fifteen engravings, and contains over thirty original contributions. John Sartain, one of the publishers, furnishes the readers of his magazine with some of the finest specimens of engravings ever published. This is the last number of the volume.

Now Ready.—Brother Jonathan Pictorial Double Sheet, for the Christmas Holidays, and New Years, 1851.—It is known every where that this magnificent paper is the wonder of the world, as regards its immense size, splendid large Engravings, and astonishing cheapness. The beauty of this year's Jonathan must astonish everybody! as the Engravings are larger and richer than ever. Indeed, it would be impossible to over-rate the splendor of this magnificent Christmas sheet.

The spirited picture of "The Country Girl in New York," is a master-piece of American Fine Arts, and occupies a double page of this mammoth sheet.

Another fine large picture is a group of spirited portraits at President Taylor's Death Bed, being the distinguished relatives and friends of the dying President.

Another gem is the "Dream of Love and Pleasure," a large picture occupying the first page, and pronounced the most beautiful and spirited original design ever made in America.

We have not room to enumerate a tithe of the beautiful engravings, popular reading, fun, frolic, anecdote, and Christmas repartee, which go to make up this stupendous sheet. Of one thing we are certain—it is by far the best and handsomest pictorial paper ever issued in America, or any where else.

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Any person sending us three subscribers will be entitled to a copy of the "History of Propellers and Steam Navigation," re-published in book form—having first appeared in a series of articles published in the fifth Volume of the Scientific American. It is one of the most complete works upon the subject ever issued, and contains about ninety engravings—price 75 cents.

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